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ABSTRACT

This report presents details of one aspect of a year-long sociolinguistic study. The subjects were 165 pupils and their teachers in six second, third, and fourth grade classrooms in a lower socioeconomic, multiethnic elementary school. Six language arts lessons were videotaped in each classroom. Each lesson was played back in three segments to pupils on the same day it was taught. In individual interviews, pupils were asked after each segment, "What did you hear anybody saying in that part of the lesson?" The videotapes were analyzed according to: (1) a language dimensions approach, (2) speech acts, and (3) the structural sequencing of question cycles. The elements of classroom language that were most salient to pupils were analyzed, based on each of these three descriptions, to identify what each approach might reveal about classroom language factors that may contribute to success in school. The conclusion of an earlier report (that teachers and pupils agree in focusing on pupil talk while differing in strength of focus on that talk, and in narrowness of focus within each question cycle) was sustained and extended. The method of "triangulation" of findings from alternative observation systems was recommended for use in further research. (Author/JB)

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ED207364

Final Report
Participant Perspectives of Classroom Discourse

Part IV:

HOW DO WE KNOW?
(Alternative Descriptions of Classroom Discourse)

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FL 012 578

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ABSTRACT

This report presents details of one aspect of a year-long sociolinguistic study of participant perspectives of classroom discourse, and focuses on the methodological question of how the findings about relationships between classroom language factors and pupil success in school may be affected by the selection of one of several alternative linguistic systems for analysis of classroom language. The subjects were 165 pupils and their teachers in six second, third, and fourth grade classrooms in a lower socioeconomic, multiethnic elementary school located at the southern end of the San Francisco Bay. Six language arts lessons were videotaped in each classroom between September and January. Each lesson was played back in three four-minute segments to pupils in the class, on the same day it was taught. Pupils were interviewed individually, and asked after each segment, "What did you hear anybody saying in that part of the lesson?" The videotapes were used to produce transcripts of the lessons. Pupil reports of what they heard were compared to lesson transcripts to identify language events which were most "salient" to pupils.

The videotapes and/or transcripts of the lessons were analyzed by three different sets of researchers, using three different approaches to analysis of classroom language: a language dimensions approach, a speech act analysis, and an analysis of the structural sequencing of question cycles. Descriptions derived from these three approaches were compared in several ways. The elements of classroom language that were most salient to pupils were analyzed, based on each of these three descriptions, to identify what each approach might reveal about pupil perceptions of classroom discourse. Two classrooms that were significantly different in final reading achievement were compared, based on each of the three descriptions, to identify what each approach might reveal about classroom language factors that may contribute to success in school. Finally, the three analytic approaches were compared, to identify the ways in which their descriptive findings supported and supplemented each other, as well as the ways in which they contradicted each other.

It was concluded that the initial findings of the study, based on the language dimensions approach to analysis of classroom language, were supported as a result of this comparative analysis. More importantly, they were clarified, extended, and strengthened considerably. As a result of this investigation, the method of "triangulation" of findings from alternative systems of classroom observation was strongly recommended for use in further research on teaching.

FOREWORD

This final report is organized into five separate parts, which are:

Part I: What Did Anybody Say? (salient features of classroom discourse)

Part II: Why Do You Ask? (interpretations of the question cycle)

Part III: Rules of Discourse, Classroom Status, Pupil Participation, and Achievement in Reading: A Chaining of Relationships.

Part IV: How Do We Know? (alternative descriptions of classroom discourse)

Part V: Attending to the Discourse of Classmates in Play Settings

Copies of other parts of this report can be obtained from Syracuse University at a nominal fee.

A number of people have contributed in a variety of ways to the conduct of the study and the preparation of the final report, and we are grateful to them all. Rosedith Sitgreaves of Stanford University gave us invaluable advice on questions of statistical analysis. Roger Shuy of Georgetown University and the Center for Applied Linguistics was a major consultant on the sociolinguistic analysis of the data and was assisted in his analyses by Steve Cahir, also of the Center for Applied Linguistics. Arnulfo Ramirez of the State University of New York at Albany conducted a sub-study that provided a speech act analysis of all thirty-six lessons. Margaret Lay-Dopyera of Syracuse University conducted a sub-study that provided a description of pupil's communication patterns in play settings.

Research assistants who bravely waded with us through the masses of data, contributing important ideas of their own along the way, included Mary Hamilton at the California State University at Hayward, and Gary Galluzzo, Fred Fagal, and Patricia Graham at Syracuse University. The hardy souls who sat on the floor talking with pupils throughout the school year of 1978-79,

and who enabled us to gather a wide variety of relevant data because they so quickly won the trust and cooperation of those pupils, were Susan Lytle, Kitty Norton, Stephanie Gannon, and Greg Nierman.

We wish to express our appreciation to Kent Viehoever and Virginia Koehler of the National Institute of Education for their advice and assistance in dealing with administrative idiosyncracies of the project, and to Harold Shatzen (Research Foundation, California State University at Hayward), William Hough, and William Wilson (Office of Sponsored Programs, Syracuse University) for their assistance in dealing with budget matters.

Production of this final report proceeded according to schedule because of the skillful typing of Laurie Battelle and Linda Wozniak. We are indebted to them for their cheerful assistance.

Most of all, we owe our thanks to the pupils and teachers of the "South Bay School," who shared with us their thoughts about language in classrooms, to the parents, who welcomed us in to their homes to videotape family conversations, and to the principal, who provided the support and resources to make us feel at home in his school. We have learned much from all of them, and will not soon forget any of them.

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INTRODUCTION

Most classroom researchers would agree that "a major problem in studying classroom behavior is that it takes a tremendous effort to really see what is happening, rather than simply taking the scene for granted and interpreting it in terms of conventional categories" (Stubbs, 1976, pg. 70). Proponents of classroom interaction analysis have dealt with this problem to some extent by having the teacher code the interaction and make his/her own interpretations (Flanders, 1970; Parsons, 1968; Morine, 1975). Ethnographic studies, sociolinguistic studies, and studies of teacher information processing have dealt with it by making a concerted effort to gather data about the participants' interpretations of the behavior, chiefly through a variety of interview techniques. Sociolinguists particularly have emphasized the need to study participant interpretations of the social situations in which language occurs.

Hymes (1972 points out that:

> "Authority accrues to an investigator from knowledge of a wide range of relevant materials, from mastery of methods of analysis, from experience with a type of problem. But the authority also accrues from mastery of activities and skills, from experience with a variety of language in a community. An investigator depends upon the abilities of those in the situation, whether it is a question of scientific inquiry or practical application." (pg. XV)

Stubbs (1976) argues that:

> "Research on children and classrooms is usually done by outsiders, but ultimately it is only the participants in a situation who have full access to all its relevant aspects. Ultimately a sociolinguistic description of classroom language must come to grips with the values, attitudes, and socially loaded meanings which are conveyed by the language, and only the participants have full access to these values." (pg. 76)

In addition to an acknowledgement of the importance of participants' interpretations, two other methodological matters are of concern to sociolinguists engaged in classroom research or studies of language development in children. The first is the problem of studying the "natural situation," a problem for

all classroom researchers, for it has frequently been noted that having an observer present in itself creates an unnatural situation. This is particularly true when the social setting is what is being studied, for it is the social aspects of the situation which may be most affected by the presence of an outside observer. Pride (1970) underscores this nicely when he points out the difficulties inherent in observing private verbal behavior, for with the presence of an observer, privacy disappears.

Studies differ widely in how closely they sample the natural language setting, and in whether they report examples of actual language used. Rather removed from the natural situation are studies where participants' retrospective reports are used as the basic data, supported by observations of a few actual communication events (e.g., Woods, 1975). Children's language in experimental or test situations has been examined in a series of studies (e.g., Heider, Cazden & Brown, 1968; Hawkins, 1969; Brandis & Henderson, 1970). Mehan (1973) has argued that a child's language ability is not an absolute quality, but rather the outcome of a social encounter, thus suggesting that the test situation itself "constructs" the child's ability, and is not a valid measure of his/her actual use of language.

A large preponderance of studies have been conducted through observation of and participation in the natural speech situation. Labov (1970, 1972) in particular has based his work on long-term intensive field work and participant observation in the speech communities he has investigated. He provides detailed analyses of the actual language recorded in these natural settings.

Some investigators observe and report on only one type of social situation, focussing primarily on the classroom or instructional setting (e.g., Bellack, 1966; Barnes, 1969; Atkinson, 1975). Gumperz and Herasimchuk (1972) varied the social situation by varying the role relationship when they compared

the discourse of an adult teacher with a group of children to a 6-year-old teaching a 5-year-old child. Several investigators have compared children's language use in two different social situations, thus obtaining further insight into characteristics of classroom discourse. Philips (1972) compared school settings to community settings in her study of Native American children. Boggs (1972) recorded and observed Hawaiian children in lessons, on the playground, and in conversation with an adult observer, and identified different patterns in their speech that corresponded to these different situations. In studying the functions of silence in Sioux and Cherokee classrooms, Dumont (1972) observed children in classrooms and in the community.

Taken in their totality, these studies demonstrate that sociolinguists have made a concerted effort to observe language in natural social situations, to record it as completely and accurately as possible, and to compare classroom language to language used in other social situations in order to better understand the social meaning of classroom discourse.

The second methodological matter of concern has to do with the features of language that ought to comprise the basic data for analysis, and to some extent this appears to be based upon the "whim of the researcher" (Stubbs, 1976, pg. 107), as well as upon the problem under study. The selected features have included silence (Dumont, 1972), children's responses to and uses of questions (Boggs, 1972), the topic under discussion (Torode, 1974), teachers' use of specialized terms (Barnes, 1969), talk-about-talk, or "metacommunication" (Atkinson, 1975; Stubbs, 1976), disruptive events (Atkinson, 1975), and instances of miscommunication (Adelman & Walker, 1975). Some studies have used a combination of features, such as words, syntax, and interchanges (Mishler, 1972) or words, sentence form, and intonation (Gumperz & Herasimchuk, 1972).

There are relatively few examples where researchers have analyzed class-

room language as a system, rather than focussing on isolated features of the language. Bellack, et al (1966), Schlegoff (1968), and Turner (1969) are important examples of this approach. Sinclair and Coulthard (1974) have identified a hierarchical structure of classroom discourse in which acts (e.g., elicitation, prompt, nomination) build up into moves (e.g., initiation, response; frame, focus), which combine to form teaching exchanges or boundary exchanges. These exchanges combine to form transactions, and a series of transactions form a lesson.

Stubbs (1975, 1976) has roundly criticized the tendency for researchers to select as evidence any feature of language which strikes them as interesting, and urges the importance of analyzing language as a self-contained system with an inherent organization. In particular, he calls for close attention to language sequences (e.g., sequences of words, and sequences of conversational acts) as a critical feature of language organization.

The critical aspects of methodology discussed above have been aptly summarized by Stubbs (1976) in the following statements:

> "The demands which one has to make for work on language in education are therefore as follows. The work should be based primarily on naturalistic observations and recording of language in real social situations: mainly in the classroom itself, but also in the home, and in the peer group, which is the most powerful linguistic influence on children. The work must be based on a linguistically adequate analysis of what is said. This means both being explicit about the relation between language forms and language functions and also analysing the language as linguistic systems. It is not enough, however, for the analysis to be rigorous in a mechanical way: what is required is an analysis of the social meanings conveyed by language and an analysis of people's attitudes to language. Finally, if we are to understand the general principles underlying the sociolinguistic forces at work in schools, the analysis of language in educational settings must be related to what we know of sociolinguistic behavior in other settings.
>
> These demands are stringent, and ... no work ... yet satisfies them on all counts." (pg. 112)

The study reported on here was designed with these critical methodological elements in mind. Naturalistic observations and recordings of language

were made in real social situations: in the classroom, in the home, and in play groups. A variety of tasks were used with pupils and teachers in order to identify the social meanings of language for the participants in these social settings. A special study was made of participant perceptions of form-function relationships. A sociolinguist analyzed videotapes of classroom lessons and described classroom differences with regard to a set of basic sociolinguistic concepts. Comparisons were made between the sociolinguist's perceptions of classroom language, and the participants' perceptions of the same language. Comparisons were also made between pupils' perceptions of classroom language and their perceptions of language in family conversations and in play group interactions. The findings with regard to all of these aspects of the investigation have been presented in the first three parts of this final report.

This particular part of the final report addresses a separate, but highly related, methodological concern: how might the approach that we select for the analysis of language as a linguistic system affect what we learn about language in a given social situation.

Comparing Analytic Methods

Stubbs (1976) has pointed out the limitations of observations of classroom language based on use of selected features or categories, but he has not addressed the issue of variation in approaches to analysis of language as a linguistic system. He seems to imply that any analysis which examines language as a self-contained system, and attends to language sequences, will provide an adequate description. It is a fact, however, that a variety of analytic approaches are currently in use by sociolinguists, and we have little information on what actual difference these various approaches might make in what we know.

This study provided us with a unique opportunity to investigate this question. A set of thirty-six language arts lessons, taught in six different classrooms, was available for analysis. These lessons were recorded on videotape, and written transcripts were prepared from the videotapes. Three different approaches to linguistic analysis were used over the full set of lessons. By comparing the descriptions which resulted, we can begin to identify similarities and differences in what we "know" about the language in these lessons when we select one system of analysis as opposed to another.

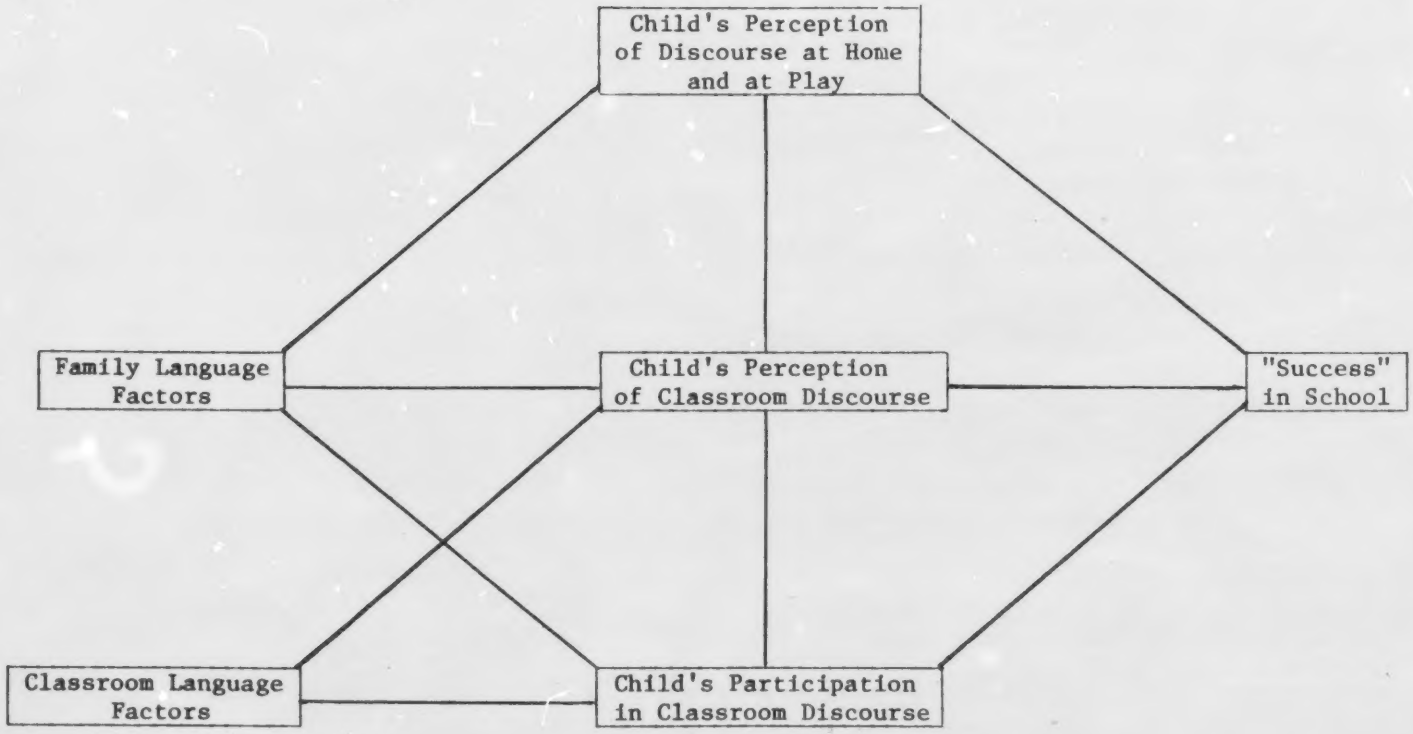
The Problem Under Investigation

This study is one of eight sociolinguistic studies funded by the National Institute of Education, to examine the general problem of causes and effects of inadequate learning of the rules and processes of classroom discourse. The general paradigm that has been used to guide this study is presented in Figure 1. In this model the child's perceptions of discourse at home or at play and at school and his/her participation in classroom discourse are seen as intervening variables between family language factors, or classroom language factors, and eventual success in school. The lines indicate the types of relationships we are examining in the total study.

It will be clear from even a quick examination of this model that the issue addressed in this paper is a critical one for the study. If different approaches to the analysis of classroom language yield very different descriptions of that language, then our tracing of relationships between Classroom Language Factors and Success in School, through the intervening variables of Pupil Perceptions of Classroom Discourse and Pupil Participation in Classroom Discourse, will yield different findings with each new approach. It is not just a matter of idle curiosity, then, that leads us to ask how much

FIGURE 1

A General Paradigm for Analysis of Participant Perspectives of Classroom Discourse


Child's Perception of Discourse at Home and at Play
Family Language Factors
Child's Perception of Classroom Discourse
"Success" in School
Classroom Language Factors
Child's Participation in Classroom Discourse

similarity we can expect to find in descriptions of classroom language that derive from alternative analytic approaches.

The variables to be specifically addressed in this part of the final report are Classroom Language Factors, Pupil Perceptions of Classroom Discourse, and Success in School. Three different descriptions of classroom language factors will be presented, based on three different approaches to the analysis of classroom language. Pupil patterns of reporting what they heard in lessons (i.e., the elements of classroom language that appeared to be most "salient" to pupils) will be compared to each of these descriptions, to identify what each approach may reveal to us about pupil perceptions of classroom discourse. Two classrooms that were significantly different in final reading achievement (entering reading controlled for) will be compared, based on each of the three approaches, to identify what each approach may reveal to us about classroom language factors that may contribute to success in school. Finally, the three analytic approaches will be compared, to identify the ways in which their descriptive findings support and supplement each other, as well as the ways in which they contradict each other.

PROCEDURES

Subjects

The subjects of this study are 165 children, and their teachers, in six second, third, and fourth grade classrooms, in a single school located at the southern end of the San Francisco Bay. The six teachers are all female, and all have been teaching for many years. Four are Anglo, one is Black, and one is Portuguese. The school is located in a lower socioeconomic, multiethnic, urban area, consisting mainly of small, single family dwellings. Stable, two parent families predominate, and the school population is also remarkably stable

for a lower SES community. About 45% of the pupils are Mexican-American, 35% are Anglo, 11% Black, and 9% other minority groups, including primarily children of Asian and Portuguese extraction. The school appears to us to be remarkably well integrated, with numerous friendship choices that cross ethnic "lines."

While several Mexican-American grandparents, and a few parents, speak only Spanish, most of the Mexican-American parents are at least bilingual, and many speak primarily English. Almost all of the children we worked with were reasonably fluent in English. There is community interest in maintaining the Mexican-American culture in the family, but parents are also actively interested in having their children succeed in the American school culture.

Data Collection Procedures

The basic data collection procedure for this study involved videotaping six language arts lessons in each classroom over the first half of the school year (September through January). Teachers selected their own content for these lessons. We specified only that they not teach spelling or handwriting, and that the lessons should include the whole class and should involve some verbal interaction (i.e., not be comprised merely of individualized seatwork). The lessons covered a variety of topics (e.g., capitalization, nouns, poetry analysis, creative writing) and a variety of activities (e.g., pantomime, sensory awareness exercise, textbook exercises).

The videotaped lessons were played back to pupils and teachers on the same day that they were taught. Each pupil viewed three different lessons, working individually with a data collector, and responding to a variety of data collection tasks. Each teacher viewed all six lessons, and responded to the same set of data collection tasks as did the pupils. The data collection task most relevant to this paper involved identifying the classroom language that was "heard" by pupils.

Approximately 12 minutes of a classroom period were videotaped, including two to three minutes from the "opening" of the period, one or more segments in which verbal interaction among pupils and teacher occurred, and two to three minutes at the end of the lesson. The videotaped lesson was played back for participants in three segments, each about 3-4 minutes in length. At the end of each segment, each researcher asked the pupil with whom (s)he was working, "What did you hear anybody saying in that part of the lesson?" The answer was quickly recorded verbatim on a 3 x 5 card, and the researcher then asked, "What else did you hear anybody saying in that part of the lesson?" This continued until the pupil could think of no more responses. The next videotaped segment was then played, and the procedure repeated, until the complete videotaped sequence had been viewed.

Videotapes of the lessons were used to produce written transcripts. Student reports of what they heard being said in the lessons were compared to these transcripts, to identify the language events that appeared to be most "salient" to pupils.

Data on reading achievement were collected based on results of the Metropolitan Achievement Test, which was routinely administered by all teachers in the school in October. "Entering" reading achievement was measured in the fall of 1978, at the beginning of our year of data collection. "Final" reading achievement was measured in the fall of 1979, following our year of data collection. In examining the classroom language factors that might be related to final achievement, we have used regression analysis to control for entering reading achievement.

Data Analysis

Three separate sociolinguistic analyses were carried out, using the videotapes/transcripts of the thirty-six lessons. In the first analysis, conducted

by Roger Shuy, with the assistance of Steve Cahir, both of the Center for Applied Linguistics, the videotapes were viewed and reviewed, and the transcripts were studied in addition. On each of three occasions a "pair" of lessons was analyzed for each of the six teachers (2 lessons taught in early and late September, 2 lessons taught in October and November, and 2 lessons taught in December and January) and a protocol description of the language in each pair of lessons was prepared. At the end of the school year the videotapes, transcripts, and protocols for all six lessons were reviewed for each teacher, and a summary description was prepared. These summary descriptions were then examined, and a set of basic features or "dimensions" appearing in most of these descriptions was identified. Finally, an overall report was prepared explaining these language dimensions, and describing and comparing the six classrooms with regard to them.

In the second analysis, conducted by Arnulfo Ramirez of the State University of New York at Albany, with the assistance of three graduate students, the lesson transcripts were coded, using a system of speech act analysis. This system was adapted from Smith and Coulthard's model (1975) and used in a Stanford study of discourse patterns during composition lessons (Ramirez, 1979). Some additional refinements of the system were made for use in this study. Coders were trained in use of the revised system, and inter-rater reliability was established by independent coding of three separate lessons, with percentage agreements among observers ranging from .75 to 1.00 on all categories of speech acts. Each lesson was coded separately and the frequencies of exchanges, moves, and the various categories of speech acts within each move, were identified by source (teacher or pupil) for each lesson. Means, standard deviations, and ratios were computed, and the Friedman two-way analysis of variance by ranks was used to identify significant differences in patterns of language

use over time and across teachers.

In the third analysis of classroom language factors an adaptation of an approach proposed by Johnson (1979) was used. In this approach the question cycle, solicit-respond-react, identified by Bellack (1966), is viewed in terms of three types of sequential relationships:

1) a "conjunctive" relationship, where the same question is responded to by more than one student;

2) an "embedded" relationship, where the reaction takes the form of a new (e.g., probing) question, thus beginning a cycle within a cycle; and

3) a structurally independent relationship, where one cycle is closed out and a new question is asked of a new respondent.

Greta Morine-Dershimer and Gary Galluzzo used this approach to categorize the question cycles in each lesson, and developed a way to diagram the sequential structure of the lesson. The categorizing was done independently by the two coders, Morine-Dershimer being thoroughly familiar with both videotapes and transcripts of the lessons, and Galluzzo being thoroughly familiar with the transcripts. In the rare instances where disagreements occurred, the coding was discussed and a concensus reached.

For both the speech act analysis and the diagramming of question cycle sequences an analysis was made of the saliency of various types of speech events for pupils. A "salient" event was defined as one which was specifically reported as heard by 4 or more pupils (12 to 14 pupils viewed each videotaped lesson, and were thus "available" to report any given event). In the case of the speech act analysis, a proportion of salient events was computed for each type of move, and for each type of speech act within a move. Friedman's two-way analysis of variance by ranks was used to identify significant differences in the saliency of various moves or acts. In the case of the diagramming of question cycle sequences, a proportion of salient events was

computed for pupil responses within each type of question cycle. Friedman's two-way analysis of variance by ranks was used to identify significant differences in this instance as well.

It should be noted that the methods of synthesis and summary presentation of descriptive information differ somewhat for each of these three approaches, but that each is appropriate for the analytic approach being used.

FINDINGS

Identifying the Dimensions of Classroom Language

The following description was written by Roger Shuy to summarize his findings with regard to the characteristics of talk in the six classrooms under investigation. It is divided into three parts: where the talk takes place; how the talk takes place; and what the talk means.

Where the talk takes place. One must begin a sociolinguistic analysis of classroom talk by noting that language is used for many different purposes in many different ways. Consequently, any description or interpretation of a given exchange of talk must be set in the many conceptual and physical contexts in which such talk occurs. All classrooms, for example, have multiple purposes, institutionally and individually. School, for example, is supposed to develop learning of content but it is also designed for learning acceptable social behavior. That is, the teacher's role is to further both cognitive growth and social development. These concerns are sometimes mutually supportive and, at other times, at odds with each other. In addition, while learning can only be individual (that is, someone cannot learn for someone else), our schooling system requires such learning to take place in the context of thirty or more children per teacher who are together, in the same room, the majority of the time. This rather obvious fact must be stated because it is such an important constraint on classroom talk. Perhaps the

major distinction between classroom talk and other daily discourse is that the latter is most often one to one and the former is most often thirty or more to one.

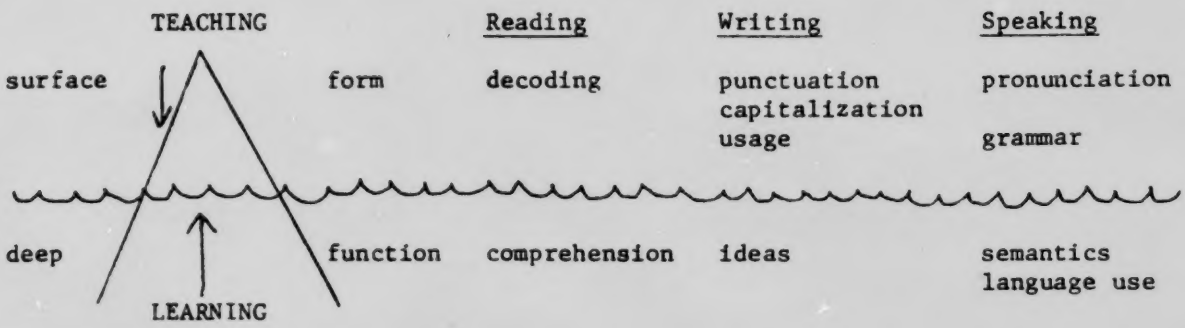
It is also an unfortunate fact of education that the social function of talk is more visible than the content or cognitive function. Evidence of this is the frustration of the language arts in getting beneath the surface of learning to what linguists have referred to as the deep structure. Elsewhere, I have characterized this difference with an "iceberg illustration," here depicted in Figure 2.

Figure 2 shows, essentially, that the focus of instruction in the teaching of reading, writing, and speaking is most frequently at the surface level. We give lip service to the importance of the deep levels, the functions of these concerns, but relatively little instructional time or focus. Education is not alone in having responsibility for this situation. The general public finds it most convenient to be critical of education at the points where education can be seen--the forms. They fail to understand that learning takes place from deep to surface (the exact way babies learn their native language) rather than from surface to deep.

It is not surprising, then, that the teachers in this study tend to focus on the aspects of language arts which are, on the whole, surface: the socialization aspects rather than the content aspects. This is not to say that these socialization aspects are unimportant. They are most certainly the crucial delivery system of the content and the latter would not be actualized without such a delivery system. The question, rather, is one of focus and balance. It is my position that, just as it is more important to have a good idea and say it poorly than to have a poor idea and say it well, so it is more important to have a good language arts content with poor delivery than a poor or zero concept with good management and delivery.

FIGURE 2

Iceberg Illustration



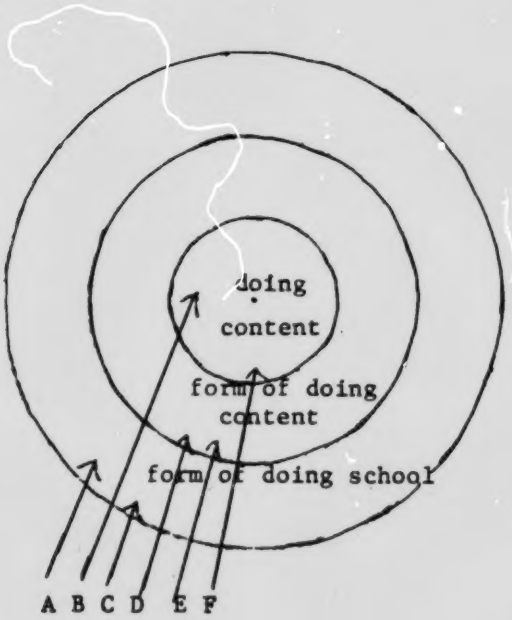
Naturally, the best of all possible worlds would find a good concept well delivered.

The six teachers in this study approach the content of the language arts lessons in somewhat different ways. It may be useful to symbolize this range from content to delivery as a set of concentric circles (see Figure 3).

When we speak of "where the talk takes place", then, it is clear from Figure 3 that the majority of talk does not take place in the content aspect of language arts. This is not to say that no content is mentioned or learned. On the other hand, very little language arts content was provided to the students in any of these twelve lessons. In the twelve lessons of Teachers B and F, for example, there are small amounts of language arts content taught--for example, the capitalization of "I". The lessons of other teachers were ostensibly about such things as antonyms but the buildups were so removed from the topic that there is little chance of any language arts content learning taking place. Teachers A and C had no language arts content at all. Teachers D and E had even less language arts content than Teachers B and F. Figure 3 attempts to recognize that the classrooms of all six teachers contained a great deal of talk about "doing school" which means the social aspects of being in school such as management, directions about taking out books, being quiet, etc., (the outer circle). Four of the teachers talked about (and permitted talk about) the form of doing the content. By this I mean that there was talk about the way one would behave or talk if one were to focus on a language arts content. This sort of talk appears to be useful as a way of getting into the content or leading up to it. All thirty-six lessons studied, however, were disappointing in terms of the actual ratio of language arts content to the forms about that content or the

FIGURE 3

Representation of Form and Content:
Where the Majority of Classroom Talk Takes Place



forms of doing school.

In terms of discourse analysis, what Figure 3 represents is that teachers B, D, E and F all introduced the topics of language arts content but that only teachers B and F developed those topics to any form of resolution. By analogy to normal conversation, it is equivalent to bringing up an appropriate subject for discussion but then not taking that subject (topic) to any logical destination. In conversation, topics eventually get resolved in some way. In these classrooms, the topic of language arts is expected in all twelve lessons. It is clearly introduced in only the lessons of teachers B, D, E and F. It is resolved in even fewer of these lessons. Teachers B and F occasionally resolve a language arts topic by focusing the content of that topic and by leading the students to it. Teachers A and C expend most of their effort on the topic of school socialization, never getting around to the topic of language arts at all.

How the talk takes place. The "how" of classroom talk is analyzed here in terms of dimensions of language. They are: talk and management; topic; self-referencing; super segmentals; and naturalness. Each of these dimensions is explored in some depth.

1) Talk and management. One of the keys to good management is in knowing where we are and where we are about to go. Identification of oneself in an agenda is managed by these teachers in quite different ways. Teacher D consistently informs her class about where they are within the lesson plan, explaining as she directs the lesson. Her lessons contain clear sequence markers--openings, continuation indicators, and closings, all accomplished with language. Likewise, Teacher F uses conversational management strategies which are quite consistent across lessons. The first of these strategies is her openings of lessons, the transition point from the

opening exercises to the lesson itself. Most frequently, this transition is accomplished by Teacher F as follows. Her introduction consists of a personal anecdote topically appropriate for a discussion with almost anyone. While the content might well be suitable for any conversation, the presentation is much more reminiscent of classroom speech: pause to get everyone's attention, silence, beginning of anecdote with a very high intonation, anecdote, and completed by a leading question which offers the class an opportunity to bid for a turn to join the conversation.

Within the lesson, this teacher demonstrates a variety of mechanisms for directing the discussion. Note the following pivotal utterances which the teacher strategically places to move the lesson forward:

(1) I'd like to turn something around a minute, then, did the elk see you?

(2) Now I'm going to come back to you because you sort of triggered something in my thinking there.

(3) Well, something that Rachel said sort of ties in with a short little poem that I'd like to read to you today.

Teacher B, in contrast with Teachers D and F, uses language to manage in a different way. Her focus is on the manner of child response more than on the content of it. In all of the lessons examined for Teacher B, the lesson questions contain instructions which require that students give appropriate answers in appropriate form. At least two lessons are the "guess what's in my head" variety where children are to ask yes/no questions designed to help them discover what the teacher has in mind. One of these lessons contains the following exchange:

Student: What shape is it?

Teacher: Can you say that another way?

Student: How big is it?

Teacher: No, why don't you ask me what shape you think it is, ask me that.

Student: Is it square?

Teacher: No.

This discussion is representative of the simultaneity of language tasks that teachers encounter. Teacher B has to control for the content of the question, which in this case is acceptable. She has work to do, however, on the form. When focusing on form, the content changes from a question of shape to one of size. Teacher B has to re-establish the content while still working on the form. Unfortunately for the student when it all comes together, the answer is still "no." Teacher B is generally skillful at these manipulations. The language teachers use most fulfills a variety of classroom needs; the interesting question of the relationships that exist between teacher language use and teaching still remains. Or, from another perspective, does the student learn the rules or does the student learn?

Teacher E manages the class in still a different way. Very strong on transition procedures--"hands down, clear desks, listen closely, etc."--she runs a tight ship in terms of the conditions for talking. Teacher E is always in control, inching forward slowly, never fully revealing the right answers and often giving only hints of them. She permits many turn-taking exchanges, offering a wide range of class participation, but very little progress toward content goal. This is a clear case of the social equality of classroom management being at odds with the probing of real knowledge. Management, for Teacher E, is done primarily by well controlled bidding (hand-raising), with short turns and little response on her part which would indicate whether or not progress toward resolution is being made. It is management by withholding information. She doles out precisely the information needed, no more and no less, and only when it is needed. This use of language allows the teacher to enforce verbally her lines of con-

trol. This is further exemplified when a student raises his hand to ask "What page of the book ?" Teacher E answers: "I haven't told you yet", immediately followed by "Would you please open your books to page 18." Maintaining control through withholding of information is certainly not limited to the classroom; neither, however, is it uncommon in the classroom.

Teacher C sets the ground-rules of her lessons via language, but not with clarity. She often presents the rules inductively without explicitly stating the rule itself. When Teacher C does attempt to explain the ground rules of the lesson deductively, the explanation is lengthy and unclear. The students are not always clear about what they are to do and are occasionally frustrated by this. Teacher C attempts to overcome this confusion by seeking the help of one of her better students. She uses this pupil by giving him many turns, and praising his answers ("Oh, I hadn't thought of that!"). Like many teachers, Teacher C has found a student on whom she can depend for participation and cooperation. In a sense, she has appointed an assistant manager.

Teacher A manages with ritualized language. If Teacher F is a classic example of natural language in the classroom, Teacher A provides a classic example of ritualized language use. The language used in this classroom is unlike anything heard by children in the other contexts of life. It is as though the teacher has decreed a special language domain to be used in that classroom to the exclusion of all others. The students in her class, by the time we see them, manage this language rather effectively, all things considered. From the perspective of education, it is difficult (if not impossible) to determine what (if anything) is ever learned. The language arts are defined almost entirely as social etiquette, ritualized choral be-

havior, and "getting ready" for something. Perhaps there is a kind of "following directions" learning which is remotely associated with comprehending oral instruction, but the price the children pay to learn it is quite great.

Almost as though ritualization of talk were not enough, Teacher A also mangages with her hands. She actually conducts the class much as an orchestra conductor conducts an orchestra. She uses her hands to sit the class down, to conduct counting functions and, of course, to lead the singing of "America". With her hands (virtually the only movement she makes) she quiets, elicits, and moves.

These six teachers, then, use language to manage in a range of ways. Since the conditions of good management never operate in isolation from what is being managed, it is difficult to assess the quality of such effort on any basis but clarity. Teacher A, for example, manages very strongly but produces a soporific effect. Teacher F manages with natural language (conversational) strategies. Teacher D marks the lesson points most effectively in a metacognitive manner. Teacher B manages toward getting the form of school and the form of content right (and also covers content in her lessons). For Teacher C, classroom language follows rigid turn-allocation (non-language) rules. Teacher E manages by controlling and withholding information.

2) Topic. Topic introduction, branching, maintenance, recycling and resolution are of great interest in any verbal exchange. Only recently has such work been seen to be of interest in education, and the lessons examined here offer hints of different teaching styles.

Teacher F, for example, is adept at topic branching. This term can be used to refer to pivotal points in the discussion when the answer to the question "What is being talked about?" changes. While theoretically any

utterance of any participant in a conversation can serve to alter the topic, classroom language has certain characteristics that constrain this generalization. Most obvious is the role of the teacher as discourse director, the person whose responsibility it is to steer the verbal interaction so as to attain the goals of schooling. In order to achieve those goals, topics which appear peripheral are more often student-introduced and teacher-truncated than those which immediately relate to lesson topics, which are teacher-introduced and class-developed.

The poem, "Accidentally," presents Teacher F's class with the rather common assignment of linking their own experiences to that which has been presented. The open-ended instructions: "What I'm going to ask you to do is think of an experience you've had that's similar to the poem, that you might like to share with us..." lead the students to literal associations via the word "swallow". The conversation develops the notion of accidentally swallowing something until the teacher asks the question: "How'd you feel if you swallowed a bug, and you swallowed dirt or dust, and you want to tell somebody about it, what would you be feeling?" A student answers that people might laugh. Teacher F evaluates the response by rephrasing: "You'd be a little bit embarrassed." Building on this evaluative paraphrase, Teacher F branches the topic and develops the lesson in another direction: "Can you think of anything else that has happened to you, not--besides swallowing--where you felt embarrassed..." In contrast to the student controlled branching in the first instance, this case illustrates this discourse mechanism as the teacher might use it. This initiative is a successful one leading to several "embarrassed moment" stories; further on, there is a teacher turn which resembles in some ways a potential topic branch. "Is there anybody in here who has never been embarrassed?" Students unanimously reject this open-

ing move by predictably answering no.

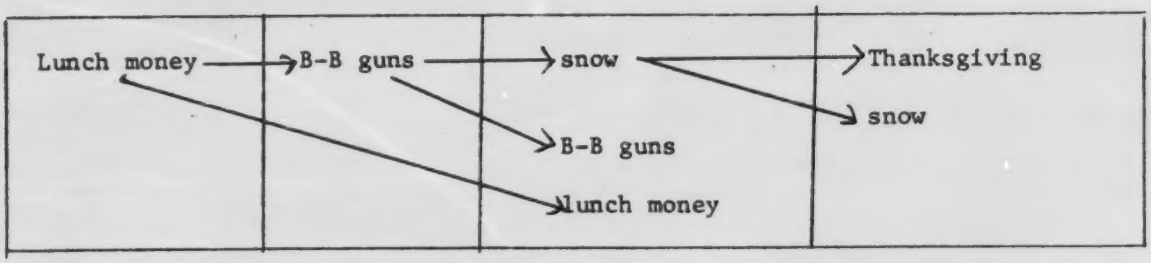
One of the main features of Teacher F's teaching style is the fluidity of her lessons. She seems to be very attentive to a need for topics to flow smoothly from one to the next. Teacher F responds to student comments in a way which builds on what the student has contributed while at the same time allowing herself to design precisely where the topic will go.

In sharp contrast is Teacher A's class, in which the students have such insecurity about what a "safe" topic is that they recycle old "safe" topics even after Teacher A has signaled a topic change. During sharing time in her class, for example the following topic cycles occur: lunch money, B-B guns, snow, Thanksgiving. Even after Teacher A signals change of topic, there is a common return to the topic, used by a conversational predecessor, which has been declared safe and acceptable. The B-B gun topic recurs, for example, after it has been declared ended. Once the B-B gun topic is exhausted, snow becomes the recurring subject and finally one girl returns all the way to the introductory classroom business and declares that she has also forgotten her lunch money. When the topic is once again shifted to Thanksgiving, the snow topic is recycled near the end of the tape (see Figure 4).

What are we to learn from this? It appears that in such a highly regulated classroom, even the topic of conversation in sharing time is thought to be restricted. Children who are so closely managed appear to be insecure about establishing even a new topic, so they cycle back on older safeness, to avoid error making. Teacher A's stress on ritual actually serves to eliminate original topic introduction on the part of students, whose efforts to suggest applications or to extend the topic are summarily dismissed or ignored. The more this rituality is encouraged, the more the students resort

FIGURE 4

Topic Cycles



to safe topics. By creating such an atmosphere, the class becomes topic-less. Since Teacher A has no particular topics herself and permits the students to have none, the class becomes a sleep-walk of ritual movement and incantation.

Teachers B, D and E fall somewhere between the extremes of Teachers F and A. Their topics are introduced, maintained, and switched almost invariably by the teacher. Teacher E has iron-fisted control, while Teachers B and D are at least amenable to suggestion. Teacher C runs into trouble with her lack of clarity of topic introduction and maintenance. In fact, her topic shifting is probably one of her weakest characteristics as a teacher.

3) Self-referencing. Identification of self is another interesting aspect of teacher talk in our sample. A consistent feature of Teacher B's language is her use of third person reference forms (pronouns or proper nouns) to refer to herself. For example:

Teacher B: I have a good one. Mrs. B. is thinking about a teacher at X School. And I want you to ask me some ....

In this instance, the teacher begins by referring to herself in the first person, switches immediately to her name and back again to the first person. Pronominal reference again changes, this time to the first person plural:

Teacher B: No. What do we know so far about this animal? What color isn't it? What do we know so far?

While it is rare outside of classroom discourse to hear someone use other than the first person singular for self-reference, this teacher's shifting from one form to another may well correspond to what portion of the lesson is happening. It appears that opening portions of her lessons are more likely

to have proper noun self-reference while summation/evaluation points in the lesson may be marked by the "we" usage.

Likewise, Teacher D also relies heavily on reference forms, both as openers ("Boys and girls, we're going to ...") and as separating social indicators. References to herself as "Miss D" solidify the social distance between her and her pupils. It appears that her rather open and emotional style of teaching causes her to need some device for putting the brakes on total informality. She seems to have chosen this device as a way of checking what might well lead to over-informality.

Teachers A, C, E, and F, on the other hand, do not make use of this self-referencing strategy to frame the lesson as Teacher B does, or to provide social braking, as with Teacher D.

4) Supersegmentals. The study of the supersegmentals of language--intonation, pitch, stress, juncture, and pace--has been largely ignored in classroom interaction. Yet the teachers in this study make use of such language features in different and interesting ways. To study supersegmentals, however, one needs a base of comparison: what do these features of intonation, pace, etc. compare with? The pace and intonation of lesson talk can be compared with that of natural conversation. Teacher B makes use of supersegmentals as follows: at the start of her lesson, her pace is slow and deliberate and the intonation and stress very teacher/lesson orientated. At one point, however, these features, as well as a decrease in volume, switch into parameters more descriptive of natural conversation. What signals the change is an interruption of the lesson focus to a mangagement task. Among the reasons possible to speculate is the immediacy of the teacher's need for help at that moment; the students at that table can help her set up for the next lesson round by moving the blocks into the starting

position. The utterance that follows slips back into characteristics of lesson talk as the teacher begins the next round with "special instructions". The juxtaposition of these sequential utterances within one teacher turn is hopefully illustrative of some of the distinctions discernible when talk and its task are co-observed.

For Teacher B, the intonational variation between lesson language and that of announcements is noteworthy. There exists an interplay of pace, intonation, and topic that seems to covary in the following manner. As the pace slows down and the intonational range increases, it is likely that the language is concerned more with the instructional segment than with the opening exercises. Within the instructional part itself, the pace seems slowest and the intonation highest during the explanation phases and least distinctive during the round-robin-like questioning.

In Teacher B's classroom, intonation correlates with topic, activity, participants, and other situational features. This teacher demonstrates a wide range of intonational and stress patterns that she consistently uses to achieve certain desired effects. In fact, her use of language in general is interesting to look at if only to confirm certain aspects of what has come to be called "teacherese". Thus she uses intonation both to identify her role as teacher from her role as helper or friend, as well as to set off parts of her lesson.

Teacher D also uses intonation for role marking. Prior to the beginning of one lesson, Teacher D says the following: "Does anyone-be very careful of the microphone--does anyone have a new practice..." The part of the utterance arbitrarily set off by the dashes is perceptively lower in volume and intonation and more rapid than the rest of the sentence. This is evidence of a language strategy that might be referred to as "intonational slot-

ting", when one utterance is embedded in another, the two seemingly unrelated topically except in terms of their co-occurrence. This is obviously by no means a complete characterization; it is, however, an interesting research topic both linguistically and educationally. Among the features that are significant are the places within an utterance where the embedding does (or can) take place, the portions of the initial utterance that are repeated immediately after the embedding, and the semantic connections possible between the two parts. Questions about the possible different intended audiences for the utterances, the comprehensibility of these slotting strategies to young or non-native speakers, and the functions accomplished by slotting information as opposed to constructing two separate utterances are also significant in Teacher D's style.

A similar effect is accomplished by Teacher F who, on one occasion, utilizes the pause to great effect. Many possible explanations could be constructed to specify why a speaker pauses when talking: to clear her throat, to wait for noise to subside, to gather her thoughts, and so on. In this particular case, the reasons for the pause could be any of the above or some combination of these and others. The functional role that this pause plays is, however, less speculative. The class focuses more attention on the teacher in anticipation of her next move. This is a discourse environment ripe for the introduction of a new topic and the transition into a new lesson. After the pause teacher says: "I was sort of curious the other day when we were working with, talking about words and language, I was sort of curious with the fact that most of you, when you talked, put phrases together." At the onset of this statement, the teacher's voice pitch is markedly higher than usual and her intonational pattern is more emphatic. Although there are no vocative attention getters (boys and girls)

and none of the other lexical items indicative of topic switch (O.K., all right, well), the pause plus intonational rise sequence appear to function similarly to announce a beginning.

Teachers C and E also make use of some intonation as sequence markers. Teacher E tends to lack the intonational emphasis that normally accompanies openings, partly because of her desire to underscore the request for quietness. There is, however, also a controlling pace she uses to dole out information when needed to her students. Likewise, on one occasion, Teacher C observes, "I'd like for you to think for a few seconds--put your gum in the trash can--I'd like for you to think for a few seconds about..." Here, the slotted portion between the dashes definitely has a different addressee than the utterance meant for the whole class. The "gum" portion is more rapid, quieter, and of lower intonation than the utterance surrounding it. The interrupted statement is completely repeated after the slotted information. This total recycle contrasts with the second example: "How can something be--(PUPIL'S NAME), you'll ... that means do this--be both broken and round?" In this example, only the word 'be' is repeated. The addressee is stated so that it is clear that the statement is not intended for the whole group. The other characteristics mentioned previously for intonational slotting hold true.

Once again, it is Teacher A whose use of supersegmentals contrasts most sharply with the other five teachers. In her classes, whatever expectations the students may have developed about education are lulled to nothingness by a deadly slow pace. She remains seated throughout all classes, asking uninteresting questions which have little or no continuity or content, in a deadening monotone.

5) Naturalness. It is very difficult to segment any of the categories

in this section from their occurrence in other categories. Naturalness of talk underlies questions, management, topic cycling, self-referencing and supersegmentals. It is clear, however, that Teacher F comes closest to making use of natural conversational style in her classroom. Rather than using the more animated and widely ranging intonation that is associated with teacher/lesson talk, Teacher F is more conversational. Intonational slotting is less evident. She shifts primarily when she reads to the class. But this switch is predictable for anyone who is reading aloud, particularly given the stylized format of verse. Her questions are naturalistic. Her management by language is real, not contrived. Topics are introduced, recycled, and switched as they would be in normal conversation. Control is sacrificed to a quality which is difficult to label but which might be called the quality of friendship.

Slightly less natural in intonation and other supersegmentals is Teacher D. But Teacher D makes good use of other natural conversational devices and strategies. For example, Teacher D makes use of a conversational technique called "one-upping" as follows:

P_1: "This red ball ... was chasing somebody."

P_2: "I seen this three headed red snake."

P_3: "I saw a red horse running around 'cause a cowboy was chasing him."

P_4: "I seen this guy carrying a red rectangle and there was blood coming off of it."

The one-upping development permitted and encouraged by Teacher D is a natural conversational strategy, heard at adult cocktail parties, for example. By developing or encouraging it in this way, Teacher D is actually (but it is not sure that it is intentional) developing a useful language function. The model looks something like this:

(Topic = red)

P_1: prosaic example ;plus vague, general reference;

P_2: more unusual example;

P_3: more exciting example plus causative plus action;

P_4: odd example plus shocking resultative.

In doing this, Teacher D encourages highly specific and descriptive language use in her students, possibly as much by her dramatic verbal behavior as by her official requests for it. Unlike Teacher A, who restricts language use by containing creativity and eliminating topic from her teaching (thus providing nothing to talk about), Teacher D elicits specificity and description through her own language use. Likewise, Teacher D's pre-lesson activities are distinctive in that conversation proceeds in ways which do more closely resemble "natural" conversation than school talk. Teacher D asks about old or new business and students introduce topics of interest to them (e.g., the "Haunted House," a P.T.A.-sponsored Halloween attraction). Characteristically, school talk is notable for the role the teacher plays as possessor of all knowledge, controller of each turn, introducer of every topic. In Teacher D's pre-lesson activities the conversation develops such that children ask and answer their own questions, seemingly informing the teacher as well as each other. This can be seen in contrast to the more typical teacher queries, known-information questions, which are used to test/check students' comprehension and knowledge. The use of repetition also points to a more natural conversation, with the teacher requesting repeats for purposes of getting information, as opposed to the more didactic functions of repetition.

With Teacher C, we see a somewhat different type and degree of naturalness of talk. Although it is sometimes possible to get an overall impression of a relaxed, naturalistic lesson, it appears, from other analyses of her classroom, that this naturalness actually stems from an as yet undeveloped

ability to do "teacher talk" effectively. Whereas Teacher F and D appear to have passed through the desire to talk like teachers and to have risen above it, Teacher C seems to be still in an early developmental stage of acquiring teacher talk and, for this reason, she seems to be more natural.

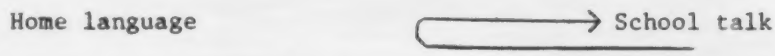
Teachers B and E provide the best examples of the special language of classroom teacherese. They are masters of the special intonation, the set teacher phrases for management, the self-referencing, and the form-over-function trap. Teacher A is the extreme polarity of stereotyped language in teaching. Her language goes beyond teacher talk to a ritualized stereotype of it. If slow pace is thought to be good, even slower is better. If freedom is bad, total anarchy is her answer.

Whereas Teacher F is personal (adding her own experience to the conversation) and natural, the others are more guarded and aloof. The role of teacher dominates in the minds of all but Teacher F and, to a more limited extent, Teachers D and B.

What the talk means. Talk in the classroom is the major device for assisting in learning. Books are helpful, and so are audio-visual aids, but the way a teacher talks can, as Robert Frost observed, make all the difference. Children come to school from an environment in which talk is conversational. They meet a new kind of language use which requires them to learn new rules. They have to learn that one cannot talk at will without making a bid for a turn (visual or verbal). They need to learn a new set of asymetrical interruption rules. They need to learn the subtleties of indirect language use. ("I see someone whose hands aren't folded" actually is an imperative, even though it has the form of an observation). The learning pattern may be described as follows:

Home conversation ——————————→ School talk

With such a developmental pattern clearly evident, it would seem resonable that effective classroom language would attempt to move in the learner's direction rather than to expect the learners to be immediately proficient in a language system they have not yet mastered. Such a strategy would look like this:



That is, the effective teacher would attempt to reduce the mismatch of school and home talk styles by:

1) eliminating the unnecessary characteristics of school talk;

2) accepting the errors in stylistic conflict caused by the mismatch; and

3) setting a reasonable and gradual pace for acquiring those aspects of school talk which are necessary to be learned.

Some of the traps into which teachers can fall are:

1) valuing the need to control (and using language to gain this control) over the need to learn;

2) setting individual learning beneath group socializing;

3) emphasizing managing (through talk) over the learning of content;

4) failing to take advantage of the students' natural developmental learning by not permitting them to talk, by ignoring what they talk about, and by not capitalizing on what they do say and then steering that talk toward the content topic; and

5) failing to build on the natural conversation style with which children are familiar.

The sociolinguistic analysis of talk used in management, topic manipulation, self-referencing, supersegmentals and naturalness, as discussed in this report, all provide aspects by which these traps can be seen. Some teachers do better than others at addressing or avoiding these traps. These problems are not essentially language problems; they are teaching/learning

issues. But by studying the language used, we can see more clearly some aspects of what is actually going on.

Something positive can be said about the use of language in the classroom by all six of these teachers, even Teacher A. This report is not meant to be evaluative, although it certainly delved into this territory whether it intended to or not. What it should point out is that there are many dimensions to talk in the classroom, and that not all teachers work in the same way. If the six teachers studied here provide any sort of microcosm of a larger universe, it is abundantly clear that any assessment of teacher competence in using language is highly ecological rather than segmental. To isolate any one language feature from the overall task and from other language features is not possible in the usual quantitative paradigm. To say that ritualized language is bad, per se, is not possible, since such language does accomplish certain desirable goals. That a natural conversational style is more effective seems intuitively right, but it may well not be right for every child or for every occasion. What is offered here is, instead, only a set of dimensions for analyzing the use of talk in the classroom, illustrated by a set of samples of six teachers in one school.

Saliency of language events to observer and participants. Roger Shuy's analysis of these lessons, presented above, focuses on the language used by teachers as a fundamental factor in the social system of the classroom, and emphasizes the ways in which classroom differences are created by subtle differences in teacher use of language. Using Shuy's approach to analysis, a comparison of the perceptions of participants and outside observer can be made with reference to the language features which appear to be most salient to each.

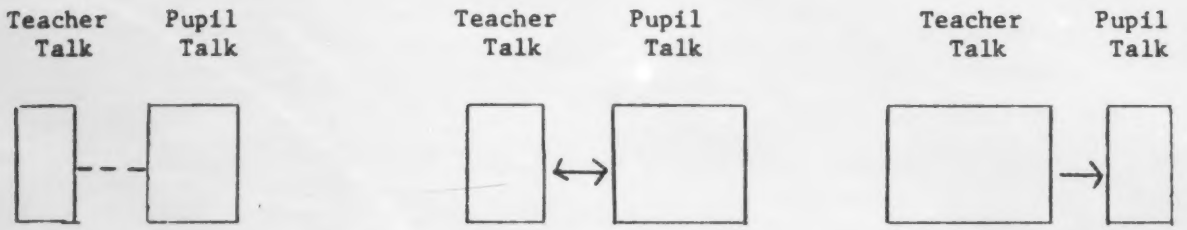
In an earlier report (Part I of this final report) we have examined in detail both pupil and teacher patterns of reporting what they heard in lessons. Pupils reported the comments of other pupils significantly more often then teacher questions. Furthermore, they tended to report pupil comments in isolation from the questions which elicited them. Teachers, on the other hand, while they also reported more instances of pupil talk than teacher talk, tended to report "question cycles." At a minimum, these consisted of a question and response. Several teachers, however, reported long sequences of question cycles. Thus, while teachers and pupils agreed in their focus on pupil talk, and on question cycles, they differed somewhat in how strongly they focused on pupil talk, and how broadly or narrowly they focused their attention within the question cycle.

From Shuy's report, we conclude that for him the most salient feature of the language in these classrooms was the way in which the various dimensions of classroom talk contributed to or detracted from the immediate function (managing the flow of talk), and the long range function (learning) of the classroom. It also seems apparent that he "heard" more teacher talk than pupil talk. The instances of pupil talk that are presented in his report are there primarily to illustrate the ways in which teacher talk serves to manage or control the flow of pupil talk.

Figure 5 illustrates these three perspectives of the saliency of classroom language, with regard to the language source. For the pupils in this study, pupil talk predominates and there is no clear relationship between teacher talk and pupil talk. For the teachers, both teacher talk and pupil talk are salient, with pupil talk having a slight edge, and there is a reciprocol relation between the two. For the sociolinguist, teacher talk predominates, and functions primarily to manipulate or direct pupil talk. Each perception contributes to our understanding of classroom language.

FIGURE 5

Salient Sources of Classroom Language



The Pupil's View

The Teacher's View

The Sociolinguist's View

Analyzing the Speech Acts
in Language Arts Lessons

The following analysis was prepared jointly by Arnulfo Ramirez and Greta Morine-Dershimer. It presents a brief general picture of exchanges and moves in the thirty-six language arts lessons, examines differences in patterns of speech acts over time and across teachers, and identifies the speech events that appear to be most salient to pupils.

Exchanges and moves. The picture of exchanges and moves presented in Table 1 indicates that these lessons in general follow a pattern of predominantly teacher-initiated exchanges, and that within these exchanges there tends to be a higher "density" of acts within the opening move than in the answering or follow-up moves. Pupil-initiated exchanges are infrequent in general, but there is greater variation among classrooms in frequency of pupil-initiated exchanges than there is in frequency of teacher-initiated exchanges. Within pupil-initiated exchanges there is no high density of acts in either the opening or answering moves for most classrooms, though Classrooms B and C do have a higher density of acts in the answering move than other classrooms. Pupil follow-up acts within pupil-initiated exchanges are almost non-existent, except for Classroom F. This picture fits our general expectations for teacher-directed lessons.

Within this general pattern, however, there are differences among teachers and differences over time. Table 2 presents ratios of pupil-initiated exchanges to teacher-initiated exchanges. Friedman's two-way analysis of variance by ranks shows significant differences among teachers ($p < .01$) on this measure. Teachers A and D consistently rank high in pupil-initiated exchanges, while Teachers B and C consistently rank low. There are no significant differences over time on this measure.

Table 3 presents information on the "density" of acts within each type of move in an exchange. Friedman's two-way analysis of variance by ranks

TABLE 1

Mean Frequencies of Exchanges and Speech Acts
Per Lesson, By Classroom
(N=6 lessons for each classroom)

Teacher-Initiated Exchanges

	Exchanges		Teachers' Opening Acts		Pupils' Answering Acts		Teachers' Follow-Up Acts	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Classroom A	30.67	9.65	77.50	14.72	38.83	19.16	19.83	8.97
Classroom B	40.67	11.08	132.00	8.35	40.17	10.01	44.33	12.91
Classroom C	43.00	14.51	110.00	23.30	48.00	13.59	42.33	10.04
Classroom D	38.33	9.87	117.17	18.95	43.50	14.34	32.33	12.49
Classroom E	39.00	11.08	114.17	12.67	48.17	15.44	33.50	14.59
Classroom F	40.33	11.60	149.00	31.26	37.83	10.59	36.50	17.52

Pupil-Initiated Exchanges

	Exchanges		Pupils' Opening Acts		Teachers' Answering Acts		Pupils' Follow-Up Acts	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Classroom A	11.33	7.63	12.50	6.95	10.50	5.91	.33	.75
Classroom B	.67	.82	.83	.89	5.17	2.12	.33	.75
Classroom C	3.00	4.98	3.83	4.74	10.00	4.28	.33	.47
Classroom D	16.33	14.28	18.17	14.50	18.17	9.53	.00	.00
Classroom E	4.83	5.78	6.50	7.37	6.80	6.18	.00	.00
Classroom F	2.83	2.71	3.17	2.27	2.17	1.77	1.33	2.98

TABLE 2

Ratios of Pupil-Initiated Exchanges
to Teacher-Initiated Exchanges
Organized by Teacher and Time

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.097	.000	.000	.026	.077	.077
Late September	1.533	.024	.026	.209	.116	.056
October	.158	.000	.036	.156	.129	.100
November	.400	.049	.591	1.148	.000	.000
December	.545	.018	.000	.471	.276	.043
January	.190	.000	.059	.655	.027	.154

Ranks for Teachers by Time: $x_r^2 = 19.20; df = 5; p < .01$

TABLE 3

Ratios of Acts to Teacher-Initiated Exchanges
Organized by Teacher and Time

Teacher Opening Acts: Teacher-Initiated Exchanges

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	2.935	5.385	2.452	3.821	2.949	4.513
Late September	3.667	3.049	3.000	2.837	2.721	4.972
October	2.237	3.871	2.018	3.594	4.065	4.700
November	3.400	3.463	4.909	4.407	3.846	2.500
December	1.788	2.464	2.130	2.588	1.655	3.426
January	2.143	2.592	2.176	2.018	3.541	3.154

Ranks for Times by Teacher: $x_r^2 = 12.135; df = 5; p < .05$

Pupil Answering Acts: Teacher-Initiated Exchanges

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.645	1.000	1.097	1.000	.923	.872
Late September	.933	1.146	.769	1.326	.907	.944
October	.974	1.194	.982	.877	.903	.900
November	1.000	1.073	1.091	.889	1.231	.958
December	1.121	1.107	1.087	1.059	1.155	.957
January	.929	.939	1.294	1.182	1.027	.962

Teacher Follow-Up Acts: Teacher-Initiated Exchanges

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.548	1.038	.823	.949	.846	.897
Late September	.667	1.171	1.026	.767	1.000	1.111
October	.921	1.226	1.018	.750	.677	.500
November	.720	1.244	1.091	.815	.615	.875
December	.333	.625	.891	.618	.966	.894
January	.667	1.367	1.235	1.036	.865	1.135

Ranks for Teachers by Time: $x_r^2 = 14.04, df = 5; p < .02$

shows no significant differences among teachers in the density of acts in the opening or answering moves, but there are significant differences ($p < .02$) in the density of acts in the follow-up move. Teacher A consistently ranks low on this measure, while Teacher B consistently ranks high. Over time, there are significant differences ($p < .05$) in the density of acts in the opening move. The density is consistently lower in December and January lessons, suggesting an increase in the "pace" of lessons by this point in the year.

Types of speech acts. Within each move a variety of types of speech acts can be used. The categories used to code speech acts are presented in Tables 4 to 6, and are defined in detail in the appendix to this report. For the most part these category labels will be fairly familiar to sociolinguists and classroom researchers alike, but a few terms deserve special clarification here. We have distinguished between "participant" and "non-participant" informatives, replies, and reacts in order to examine how much of the language in these classrooms involved personal experience, and opinion, (participant) as opposed to impersonal information (non-participant). Our distinction between "reply" and "react" may be unfamiliar to classroom researchers, and is based on the type of teacher speech act that immediately preceeds the pupil's follow-up move. A pupil reply follows a teacher question. A pupil react follows a teacher directive. Thus, if a teacher calls on a pupil after asking a question, the pupil response is coded as a "react," for the teacher nomination is coded as a directive. "Meta statement" may also be an unfamiliar term to some. This is a statement which informs about the structure or organization of the lesson, and/or indicates "where we are" in relation to that structure at a given point in time.

Table 4 presents the various categories of speech acts in the opening, answering, and follow-up moves, and indicates the frequencies of their use in each classroom over all six lessons. Friedman's two-way analysis of variance by ranks shows a significant difference ($p < .001$) in frequency of the various

TABLE 4

Variation in Frequency of Types of Acts
Within Each Move in Teacher-Initiated Exchanges
Organized by Classroom

Teacher Acts in Opening Moves

	Psuedo Question	Real Question	Directive Management (general)	Directive Management (lesson)	Indirective Management (general)	Indirective Management (lesson)	Participant Informative	Non-Participant Informative	Meta Statement
Classroom A	55	31	25	56	36	50	92	78	14
Classroom B	127	135	47	147	18	5	139	160	3
Classroom C	107	85	81	162	8	1	79	117	2
Classroom D	74	75	49	127	118	16	91	80	47
Classroom E	68	21	71	169	104	0	55	116	38
Classroom F	94	68	79	175	63	0	126	202	28

$x_r^2 = 32.61; df = 8; p < .001$

TABLE 4 (continued)

Pupil Acts in Answering Moves

	Reply		React				
	Participant	Non-Participant	Non-Verbal	Participant	Non-Participant	Real Question	Read/Recite
Classroom A	7	40	7	39	20	7	25
Classroom B	1	61	8	53	88	23	7
Classroom C	11	81	2	28	99	14	21
Classroom D	3	70	34	32	99	2	2
Classroom E	7	10	4	43	135	10	17
Classroom F	14	5	10	55	95	0	15

$x_r^2 = 22.59; df = 6; p < .001$

Teacher Acts in Follow-Up Move

	Accept	Praise	Comment	Repeat	Correct	Paraphrase
Classroom A	77	12	20	6	2	2
Classroom B	114	35	39	58	15	5
Classroom C	153	10	29	41	12	2
Classroom D	93	18	25	45	4	8
Classroom E	121	4	24	37	14	1
Classroom F	127	33	28	26	5	0

$x_r^2 = 24.92; df = 5; p < .001$

types of speech acts for each of the moves. In opening moves, directive management of the lesson and non-participant informatives consistently rank high in frequency of use, while indirective management of the lesson and meta statements consistently rank low. It is worth noting here that "real" questions (i.e., questions to which teachers do not already know the answers) and participant informatives both fall in the middle range of frequency of use. These types of speech acts are not as rare in these classrooms as we might expect. In answering moves, non-participant reacts consistently rank high in frequency of use, while non-verbal reacts (e.g., physically carrying out a teacher directive), real questions, and participant replies consistently rank low. Participant reacts, non-participant replies and read/recites all fall within the middle range in frequency of use. In follow-up moves, accepts consistently rank high in frequency of use, while corrects and paraphrases consistently rank low. Praise, comments, and repeats all fall within the middle range.

When variation in frequency of use of types of acts within each move is examined in relation to time of year, in Table 5, the same patterns are repeated, with the same significant differences ($p < .001$) emerging. It would appear then, that the tendency to use certain types of speech acts more frequently than others holds across all six classrooms and across all five months of the first half of the school year.

Speech act ratios. To examine patterns in use of speech acts more closely, we have calculated a series of ratios, and used Friedman's two-way analysis of variance by ranks to identify significant differences among teachers and over time. Table 6 presents ratios related to the giving and seeking of information by teachers in opening moves. The ratios considered are real questions to psuedo questions, participant informatives to non-participant informatives, and seeking information (all questions) to giving information (all informatives). There are no significant differences among teachers or over time on any of these measures. In most cases there are clear variations across

TABLE 5

Variation in Frequency of Types of Acts
Within Each Move in Teacher-Initiated Exchanges
Organized By Time of Year

Teacher Acts in Opening Moves

	Psuedo Question	Real Question	Directive Management	Directive Management	Indirective Management	Indirective Management	Participant Informative	Non-Participant Informative	Meta Statement
Early September	112	84	121	139	70	19	101	109	29
Late September	76	63	56	130	68	6	79	176	28
October	62	67	30	124	51	18	119	124	23
November	86	56	37	140	61	8	113	112	26
December	95	82	40	163	24	10	78	115	14
January	94	63	61	140	73	10	96	117	12

$x_r^2 = 41.41; df = 8; p < .001$

TABLE 5 (continued)

Pupil Acts in Answering Moves

	Reply		React				
	Participant	Non-Participant	Non-Verbal	Participant	Non-Participant	Real Question	Read/Recite
Early September	2	38	17	17	112	5	30
Late September	5	26	27	52	85	1	5
October	8	24	13	54	64	9	13
November	7	30	3	25	71	8	27
December	21	56	2	93	68	23	5
January	0	119	3	9	136	0	2

$x_r^2 = 26.02; df = 6; p < .001$

Teacher Acts in Follow-Up Moves

	Accept	Praise	Comment	Repeat	Correct	Paraphrase
Early September	107	19	30	35	6	2
Late September	109	18	26	48	7	3
October	98	20	36	14	8	6
November	108	13	14	25	9	3
December	95	13	24	34	18	3
January	154	29	38	57	6	1

$x_r^2 = 27.94; df = 5; p < .001$

TABLE 6

Teacher Acts in Opening Move:
Ratios for Seeking and Giving Information
(Organized by Teacher and Time)

Seeking Information - Real Questions: Psuedo Questions

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.286	1.375	1.000	1.154	.043	.640
Late September	1.000	4.000	.308	.563	.250	.647
October	.357	.563	1.900	1.500	.100	9.000
November	.400	.618	.333	1.800	1.142	.615
December	1.000	1.080	.600	14.000	1.000	.333
January	.875	.857	1.833	.448	.154	.600

Giving Information - Participant Informative: Non-participant Informative

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.400	1.148	.333	2.000	.583	1.047
Late September	.278	.304	.800	2.857	.292	.232
October	1.071	1.217	1.231	1.200	.486	1.042
November	2.750	1.588	.541	1.143	.625	.900
December	1.285	.846	.538	.600	.900	.500
January	3.000	.810	.786	.267	.263	.703

Seeking Information: Giving Information

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.321	.655	2.800	1.037	1.263	.953
Late September	.087	.667	.756	.926	.323	.406
October	.655	.490	1.000	.758	.212	.408
November	.700	1.250	.281	.467	.577	.553
December	1.250	1.083	2.000	.625	.737	.545
January	.341	1.368	.680	1.448	.600	.254

lessons for each individual teacher, which suggests that patterns of giving and seeking information may vary according to the particular kind of lesson being taught. (We will examine this further at a later point.)

Table 7 presents ratios related to management acts by teachers in opening moves. For the ratio of management (directive and indirective) to giving and seeking information (questions and informatives), there are significant differences among teachers ($p < .01$). Teacher E consistently ranks high, and Teacher B consistently ranks low. For the ratio of indirective management (general and lesson-related) to directive management (general and lesson-related) there are also significant differences among teachers ($p < .001$). In this case, Teacher D ranks high and Teacher C ranks low. For the ratio of general management to lesson-related management, there are again significant differences among teachers ($p < .01$). Teachers D and E rank high on this measure, while Teacher B ranks low. Thus we see clear differences among teachers in their patterns of language with regard to management acts. Teacher B has low ratios for both the management to information measure and the general management to lesson-related management measure. Teacher C has low ratios for the indirective to directive management measure. Teacher D has high ratios for both indirective to directive management and general to lesson-related management. Teacher E has high ratios for both management to information and general to lesson-related management. Teachers A and F fall in the middle ranges for all these ratios.

For the general management to lesson-related management ratio there are also significant differences over time ($p < .05$). This ratio tends to be high in September and January, and low in December. Our tentative explanation for this pattern is that teachers may use more general management in September when school is beginning, and drop off in use of this type of speech act as the classroom routines become established, reaching a low point in December. In January, after the long holiday season, it may be necessary to reestablish general management routines to some extent, resulting in an increase in this

TABLE 7

Teacher Acts in Opening Move:
Ratios for Management Acts
(Organized by Teacher and Time)

Directive and Indirective Management: Seeking and Giving Information

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	1.216	.458	.882	1.127	1.372	.857
Late September	.480	.240	.468	1.231	1.512	.629
October	.729	.526	.845	.793	.746	.188
November	.569	.343	.452	1.182	1.000	.966
December	.500	.380	.567	1.051	1.879	.431
January	.475	.411	.762	.634	1.825	.759

Ranks for Teachers by Time: $x_r^2 = 19.524; df = 5; p < .01$

Indirective Management: Directive Management

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.667	.692	.065	3.181	.240	.345
Late September	1.667	.000	.000	2.111	1.733	1.200
October	3.000	.667	.000	12.000	1.818	.000
November	1.250	.000	.500	4.000	3.750	1.714
December	2.000	.250	.000	.385	4.333	.100
January	4.000	.000	.063	1.375	2.384	1.571

Ranks for Teachers by Time: $x_r^2 = 16.85; df = 5; p < .001$

General Management: Lesson-Related Management

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.800	.955	.971	2.875	1.107	1.181
Late September	2.000	.200	.370	.778	1.952	1.178
October	.296	1.000	.140	1.300	1.043	.444
November	.450	.214	.833	1.363	.864	.500
December	.500	.152	.308	.783	.348	.333
January	.556	.276	1.133	.731	1.517	1.059

Ranks for Teachers by Time: $x_r^2 = 13.91; df = 5; p < .01$
Ranks for Times by Teacher: $x_r^2 = 11.28; df = 5; p < .05$

ratio.

Table 8 presents ratios comparing teacher use of meta statements to other informatives (participant and non-participant) and to lesson-related management. Meta statements are, in a sense, informatives about the overall management or progress of the lesson. There are significant teacher differences for each of these types of ratios ($p < .01$ in each case). The patterns of differences are the same for both measures, with Teachers D and E ranking high, and Teachers B and C ranking low.

In Table 9 we examine ratios for pupil acts in the answering move, comparing replies to reacts and participant responses (replies and reacts) to non-participant responses (replies and reacts). There are no significant differences among teachers or over time in the reply to react ratio. It is very consistently the case that reacts predominate over replies (i.e., that teachers tend to call on pupils just before the response occurs), but the degree to which this occurs varies randomly across lessons.

There are significant differences over time ($p < .01$) in the ratio of participant replies and reacts to non-participant replies and reacts. In this instance December ratios tend to be highest and January ratios tend to be lowest. That is, pupils appear to be reporting more personalized information in December, and more impersonal information in January. This December to January shift parallels the shift noted earlier in the general management to lesson-related management ratio, and supports the supposition expressed earlier that January may be a time for "getting back down to business" after the holiday season. This attitude is readily recognizable among teachers, and these findings suggest that it may be reflected in classroom language patterns as well.

There are no significant differences among teachers in the ratios of participant replies and reacts to non-participant replies and reacts. Certain lessons stand out with very high ratios here, and most teachers exhibit a

TABLE 8

Teacher Acts in Opening Move:
Ratios for Meta Statements
(Organized by Teacher and Time)

Meta Statements: Other Informatives

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.179	.000	.000	.310	.211	.163
Late September	.130	.017	.000	.148	.323	.145
October	.034	.020	.034	.152	.250	.041
November	.133	.023	.018	.500	.192	.000
December	.000	.000	.000	.292	.000	.106
January	.023	.000	.000	.158	.250	.032

Ranks for Teachers by Time: $x_r^2 = 19.36; df = 5; p < .01$

Meta Statements: Lesson-Related Management

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.200	.000	.000	.813	.143	.212
Late September	.750	.050	.000	.111	.476	.356
October	.037	.050	.023	.250	.565	.222
November	.200	.036	.056	.682	.227	.000
December	.000	.000	.000	.304	.000	.212
January	.056	.000	.000	.115	.207	.059

Ranks for Teachers by Time: $x_r^2 = 15.67; df = 5; p < .01$

TABLE 9

Pupil Acts in Answering Move:
Ratios for Replies and Reacts
(Organized by Teacher and Time)

Reply: React

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.053	.130	.435	.300	.200	.030
Late September	.250	.114	.579	.196	.026	.143
October	.111	.125	.282	.529	.000	.417
November	1.300	.281	.222	.353	.125	.045
December	.933	.688	.808	.385	.132	.077
January	.737	.800	1.563	.909	.000	1.579

Participant Replies and Reacts: Non-participant Replies and Reacts

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.167	.130	.111	.261	.000	.174
Late September	1.500	8.750	.034	.100	.350	.286
October	2.000	.857	.515	.043	.692	15.000
November	.667	.028	.000	.050	.200	1.250
December	1.900	.107	.741	2.000	.935	1.500
January	.269	.000	.026	.000	.028	.000

Ranks for Times by Teacher: $x_r^2 = 16.99; df = 5; p < .01$

fairly wide range in ratios, again suggesting that shifts in these ratios may reflect the particular kinds of lessons being taught. To examine this possibility further, we combine ratios from Tables 6 and 9, to form Table 10, on the following page. Here we can compare individual lessons with regard to ratios for real to psuedo questions, teachers' participant to non-participant informatives, and pupils' participant to non-participant responses.

Three lessons stand out because of their high ratios for real to psuedo questions. These are the lessons taught by Teacher B in late September, by Teacher D in December, and by Teacher F in October. Ratios for these lessons are circled in Table 10, to highlight them. Note that the corresponding ratios for pupils' participant to non-participant responses are also high for all three lessons. That is, in these lessons teachers are asking questions for which they do not know the answer, and pupils are responding with information drawn from their own experiences. Teacher F's ratio for participant to non-participant informatives is also high for this lesson, indicating that she is contributing information from her personal experience as well. This is not the case for Teachers B and D, however. Their ratios for participant to non-participant informatives are comparatively low for these lessons, thus it would appear that they are not providing personalized information or opinions.

By way of contrast, we have boxed in ratios for three lessons taught by Teachers A, C, and E, which rank quite low in their ratios of real to psuedo questions. In these lessons teachers were asking questions for which they already knew the answers. The corresponding ratios for pupils' participant to non-participant responses are also quite low, as might be expected. Pupils are not reporting personalized information in response to these psuedo questions. For Teacher A the ratio for participant to non-participant informatives is also relatively low (in comparison to her other lessons), indicating that she is following the same pattern as the students, and providing abstract rather than personal information. Teachers C and E both exhibit moderate

TABLE 10

Comparing Ratios for
Individual Lessons

Teacher Use of Read Questions: Psuedo Questions

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.286	1.375	1.000	1.154	.043	.640
Late September	1.000	4.000	.308	.563	.250	.647
October	.357	.563	1.900	1.500	.100	9.000
November	.400	.618	.333	1.800	1.142	.615
December	1.000	1.080	.600	14.000	1.000	.333
January	.875	.857	1.833	.448	.154	.600

Teacher Use of Participant Informative: Non-participant Informative

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.400	1.148	.333	2.000	.583	1.047
Late September	.278	.304	.800	2.857	.292	.232
October	1.071	1.217	1.231	1.200	.486	1.042
November	2.750	1.588	.541	1.143	.625	.900
December	1.285	.846	.538	.600	.900	.500
January	3.000	.810	.786	.267	.263	.703

Pupil Use of Participant Replies and Reacts: Non-participant Replies and Reacts

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.167	.130	.111	.261	.000	.174
Late September	1.500	8.750	.034	.100	.350	.286
October	2.000	.857	.515	.043	.692	15.000
November	.667	.028	.000	.050	.200	1.250
December	1.900	.107	.741	2.000	.935	1.500
January	.269	.000	.026	.000	.028	.000

ratios, however, and are clearly making relatively more personal statements than their pupils.

This comparison of ratios within lessons serves to support the suggestion that even when variation in these ratios is not significantly different among teachers or over time, it is not necessarily "random." Rather, at least some of the variation appears to derive from the type of lesson being taught.

We move finally to consider ratios for teacher acts in follow-up moves. Table 11 presents ratios for praise to accepts, and corrective feedback (corrects and paraphrases) to accepts. There are significant differences among teachers for both of these ratios ($p < .02$ and $p < .05$, respectively). Teacher B is consistently high in ratios of praise to accepts, while Teacher E is consistently low. Teacher D is consistently high in ratios of corrective feedback to accepts, while Teacher A is consistently low. It is worth noting that the ratios for corrective feedback tend to be quite low generally, since both corrects and paraphrases ranked lowest in overall frequency, while accepts ranked highest.

Summary of classroom differences. The significant differences among teachers are summarized in Table 12. Each teacher/classroom stands out as being somewhat different from the others in patterns of language use. Teacher A is high in pupil-initiated exchanges, and low in both the density of acts in follow-up moves, and in the ratio of corrective feedback to accepts in the same moves. Teacher B, on the other hand, is low in pupil-initiated exchanges, and has a high density of acts in follow-up moves, as well as a high ratio of praise to accepts in those moves. She also is low in ratios of management to information, general to lesson-related management, and meta statements to both informatives and lesson-related management. To state this another way, Teacher B tends to make more informative statements, in proportion to management statements, than the other teachers, and the management statements she does make tend to be proportionately more lesson-related. (The minus signs here do not imply a negative evaluation of the behavior observed.)

TABLE 11

Teacher Acts in Follow-Up Moves:
Ratios for Praise and Corrective Feedback
(Organized by Teacher and Time)

Praise: Accept

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.154	2.000	.056	.333	.063	.214
Late September	.000	3.000	.087	.273	.071	.272
October	.412	.900	.070	.100	.000	.000
November	.077	.088	.333	.250	.000	.138
December	.100	1.400	.043	.000	.000	.138
January	.071	.150	.000	.161	.077	.485

Ranks for Teachers by Time: $x_r^2 = 13.26; df = 5; p < .02$

Correct and Paraphrase: Accept

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.000	.300	.056	.056	.125	.000
Late September	.000	.000	.087	.273	.071	.091
October	.176	.300	.000	.200	.583	.000
November	.000	.000	1.333	.167	.000	.069
December	.000	2.600	.043	.273	.026	.034
January	.071	.025	.043	.032	.230	.000

Ranks for Teachers by Time: $x_r^2 = 9.58; df = 5; p < .05$

TABLE 12

Summary of Significant Classroom Differences

	Classroom A	Classroom B	Classroom C	Classroom D	Classroom E	Classroom F
Pupil-Initiated Exchanges: Teacher-Initiated Exchanges	+	-	-	+		
Teacher Follow-Up Acts: Teacher-Initiated Exchanges	-	+				
Management: Information		-			+	
Indirective Management: Directive Management			-	+		
General Management: Lesson-Related Management		-		+	+	
Meta Statements: Informatives		-	-	+	+	
Meta Statements: Lesson-Related Management		-	-	+	+	
Praise: Accept		+		-		
Correct and Paraphrase: Accept	-			+		

+ signifies that classroom ranks high, compared to other classrooms in the study
- signifies that classroom ranks low, compared to other classrooms in the study

Teacher C stands out because she is low on four ratios. She has few pupil-initiated exchanges, she is low in relative use of indirective management, and she is low in use of meta statements in comparison to both informatives and lesson-related management. Teacher E, by contrast, is high on four ratios (not necessarily all positive features). She uses a high proportion of management statements to informatives, her management statements are more highly focused on general management, as opposed to lesson-related management, and she is high in use of meta statements compared to both informatives and lesson-related management.

Teacher D stands out as being significantly different from other teachers on the widest variety of language features. She is high on pupil-initiated exchanges, on use of indirective vs. directive management, on general vs. lesson-related management, on meta statements vs. both informatives and lesson-related management, and on use of corrective feedback vs. accepts. She is low in use of praise in relation to accepts. Teacher F, by contrast, stands out because she is neither markedly high nor low on <u>any</u> of the measures that indicate significant classroom differences. The language patterns in this classroom are either varied from lesson to lesson, or moderate across most lessons. Thus Teacher F becomes unique overall simply because she does not display a distinctive pattern on any <u>single</u> ratio.

We see from this comparative summary that the speech act analysis presented here does identify differences in patterns of language use (i.e., classroom language factors) which can be examined for possible relationships to pupil perceptions of classroom discourse or to pupil success in school. The possible relationships to success in school will be addressed in a later section.

<u>Saliency of moves and speech acts for pupils</u>. We conclude this report by addressing the question of whether speech act analysis can serve to identify speech events which have particular saliency for pupils. Table 13 presents the relevant ratios. To reiterate, we have defined a "salient" speech event

TABLE 13

Saliency of Moves and Acts to Pupils
(proportions of moves or acts reported as "heard"
by four or more pupils)

Proportion of Salient Acts in Each Move of Teacher-Initiated Exchanges

	Salient Acts in Opening Move	Salient Acts in Answering Move	Salient Acts in Follow-Up Move
Classroom A	.079	.297	.042
Classroom B	.023	.394	.011
Classroom C	.035	.232	.020
Classroom D	.082	.205	.010
Classroom E	.054	.195	.005
Classroom F	.019	.372	.005

$x_r^2 = 12.017; df = 2; p = .00013$

Proportion of Salient Pupil Comments

	Participant Replies and Reacts	Non-Participant Replies and Reacts	Real Question	Read/ Recite
Classroom A	.478	.083	.294	.440
Classroom B	.370	.376	.783	.143
Classroom C	.154	.228	.577	.000
Classroom D	.371	.195	.381	.000
Classroom E	.120	.200	.133	.471
Classroom F	.420	.410	.000	.200

Proportion of Salient Teacher Opening Acts

	Pseudo Question	Real Question	Directive Management	Indirective Management	Participant Informative	Non-participant Informative
Classroom A	.109	.032	.025	.128	.109	.064
Classroom B	.016	.007	.021	.000	.058	.019
Classroom C	.037	.012	.025	.000	.038	.077
Classroom D	.054	.067	.034	.104	.110	.100
Classroom E	.029	.000	.050	.096	.055	.052
Classroom F	.000	.044	.020	.032	.032	.015

as one which was reported by 4 or more pupils (i.e., more than 25% of those pupils available to report on any one lesson). When proportions of speech acts that are salient to pupils are compared by the move in which they occur, there are significant differences ($p = .00013$, exact probability), with acts in the answering move (i.e., pupil responses) having the most salience for pupils, and acts in the follow-up move (i.e., teacher reactions) having the least salience. Although there is a higher frequency (density) of speech acts in the opening move, these acts are clearly not as salient for pupils as those in the answering move.

When the various types of speech acts within the answering move are considered separately, however, there are no significant differences. Pupils do not consistently report hearing participant responses proportionately more frequently than non-participant responses, for example. The same lack of significant differences appears when the saliency of various types of speech acts in the opening move is examined. Perhaps surprisingly, real questions are rarely more salient to pupils than psuedo questions, and participant informatives are not sharply or consistently more salient than non-participant informatives. Thus, at the level of the speech act, this approach to analysis of classroom language does not serve to identify clearly the speech events that stand out for pupils.

Summary. To summarize, a speech act analysis of these thirty-six lessons presents a picture of six classrooms in which discourse is dominated by teacher-initiated exchanges, with a relatively high density of speech acts occurring in the opening move. Within this general pattern, there are clear differences in patterns of language use from one classroom to another, as well as differences over time. In addition there appear to be differences in speech act patterns associated with the particular type of lesson being taught.

Diagramming Lesson Structure
Through Question Cycle Sequences

The following report was prepared jointly by Greta Morine-Dershimer and Gary Galluzzo. It utilizes an adaptation of a system for categorizing question cycles that was developed by Mary Canice Johnson (1979). It presents diagrams of the thirty-six lessons, designed to display the structure of each lesson in relation to the sequencing of three types of question cycles (independent, conjunctive, and embedded). Measures calculated to reflect two basic characteristics of the sequential structure of lessons (conjunctive development and embedded development) are then analyzed to identify possible differences among teachers, over time, and across lesson types. The saliency to other pupils of pupil responses to questions is examined in relation to type of question cycle.

An introduction to the system. Bellack's (1966) organization of classroom language into question cycles (solicit-respond-react) is well known to classroom researchers. Johnson's (1979) organization of what she terms "classroom discussion cycles" into three basic types is probably less familiar, and therefore deserves some introduction. Johnson defines three types of cycles in terms of structural relationships.

The "topical," or "independent," relationship is one in which two adjacent question cycles are structurally separate, though frequently related by topic. The first cycle is closed out with a reacting move, and a new cycle is begun with a solicitation addressed to a new pupil. An example of this type of relationship is:

	Teacher E:	On page 106 is a poem that we're going to read and discuss this morning. What is the title of the poem?
Solicit		Ellen?
Respond	Ellen:	Antonio.
React	Teacher E:	Antonio.
Solicit		And the person who wrote this poem is who? Herman?
Respond	Herman:	By Laura E. Richards.
React	Teacher E:	By Laura E. Richards. OK.

The "conjunctive" relationship is one in which two or more question cycles

are tied together because the same question is asked of more than one pupil. Johnson defines this as occurring when a question is unanswered, or answered incompletely or incorrectly. We have found that this relationship also occurs when divergent questions are asked, and a variety of correct responses are given. An example of this type of relationship is:

	Solicit	Teacher D:	What is a sentence? Julie?
	Respond	Julie:	It's a little story.
	React	Teacher D:	It's a little story. OK. (nods at James)
(same Q)	Respond	James:	It tells you something.
	React	Teacher D:	James says it tells us something. A little story that tells us something. Cheryl.
(same Q)	Respond	Cheryl:	It's a little story that starts with a capital letter and ends with a period.
	React	Teacher D:	Starts with a capital and ends with a period. What are the three things we need to make a good sentence, then? Mark.
	Solicit		

The "embedded" relationship is one in which one question cycle is contained within another, because the react move involves a new solicitation of the same pupil, as in the case of a probing question, or a question of clarification. An example of this type of relationship is:

Solicit	Teacher F:	Has anyone here ever accidentally swallowed anything? John?
Respond	John:	Dirt.
React (Solicit)	Teacher F:	How did you do that?
(Respond)	John:	Climbing up a hill on my motorcycle and I hit a rock and uh...the front wheel popped up and I turned around so the bike wouldn't fall, but it fell on me and my head hit the dirt, and I ate some dirt.
(React)	Teacher F:	Your face told me how you liked the taste of that. (laughter)

Johnson's system of analysis includes many subcategories within each move and each type of cycle, but we have confined our application and adaptation of the system to the diagramming of these three main question cycle types, as they occur in sequence. A series of "topical" or independent question cycles are displayed in a vertical sequence, as below:

1
2
3

A series of "conjunctive" cycles are displayed in a horizontal sequence, as

follows:

1 2 3 4

An embedded cycle is shown as a subscript. Thus, a single probing question occurring in reaction to one response in a conjunctive series would be diagrammed this way:

1 2 3_1 4

A series of three probing questions occurring in reaction to a response in a non-conjunctive cycle (each probe would begin a new embedded cycle) would be displayed in the following manner:

1

2_3

3

To illustrate the procedure further, we present a brief interactive sequence which includes all three types of question cycles, and display our diagram of that sequence.

	Solicit	Teacher D:	Can you give me some nouns that are people? Michael.
	Respond	Michael:	Presidents.
	React	Teacher D:	Presidents are persons.
(same Q)	Respond	Robert:	Butchers.
	React	Teacher D:	A butcher is a person.
(same Q)	Respond	Mark:	Directors.
	React	Teacher D:	A director is a person.
	(Solicit)		What do they do?
	(Respond)	Mark:	They direct movies.
	(React)	Teacher D:	OK, movie directors.
(same Q)	Respond	Gavino:	Parents.
	React	Teacher D:	Parents are persons.
(same Q)	Respond	Chris:	Ancestor.
	React	Teacher D:	Ancestors are persons. Would most of them be living or dead?
	(Solicit)		
	(Respond)	Chris:	Dead.
	(React)	Teacher D:	They would be dead, huh? Judy.
(same Q)	Respond	Judy:	Sisters.
	React	Teacher D:	Sisters are persons. Very good. Now, can you remember what a noun is? Let's do it again.
	Solicit		
	Respond	Pupils:	A noun is a person, place, or thing.
	React	Teacher D:	Very good. That was a very good review.

Diagram

1 2 3_1 4 5_1 6

2

73

In this sequence, then, a series of six conjunctive (horizontal) question cycles occurred, and two of these contained embedded (subscript) cycles within them. This conjunctive series was followed by a new, structurally independent, or "topically" related cycle (vertical). We have attempted to make the diagrams which display these relationships quite simple in design, so that the "bare bones" of the lesson structure stand out. The sequence of the question cycles, for purposes of reading the diagram, moves from left to right and from top to bottom.

The lessons in graphic form. The structural diagrams for each of the thirty-six lessons are presented in Figures 6-11, with the six lessons for a given teacher all included in a single figure. The reader is thus presented with a graphic display of the lessons themselves, from which (s)he may form some hypotheses or generalizations in addition to the conclusions that we will present.

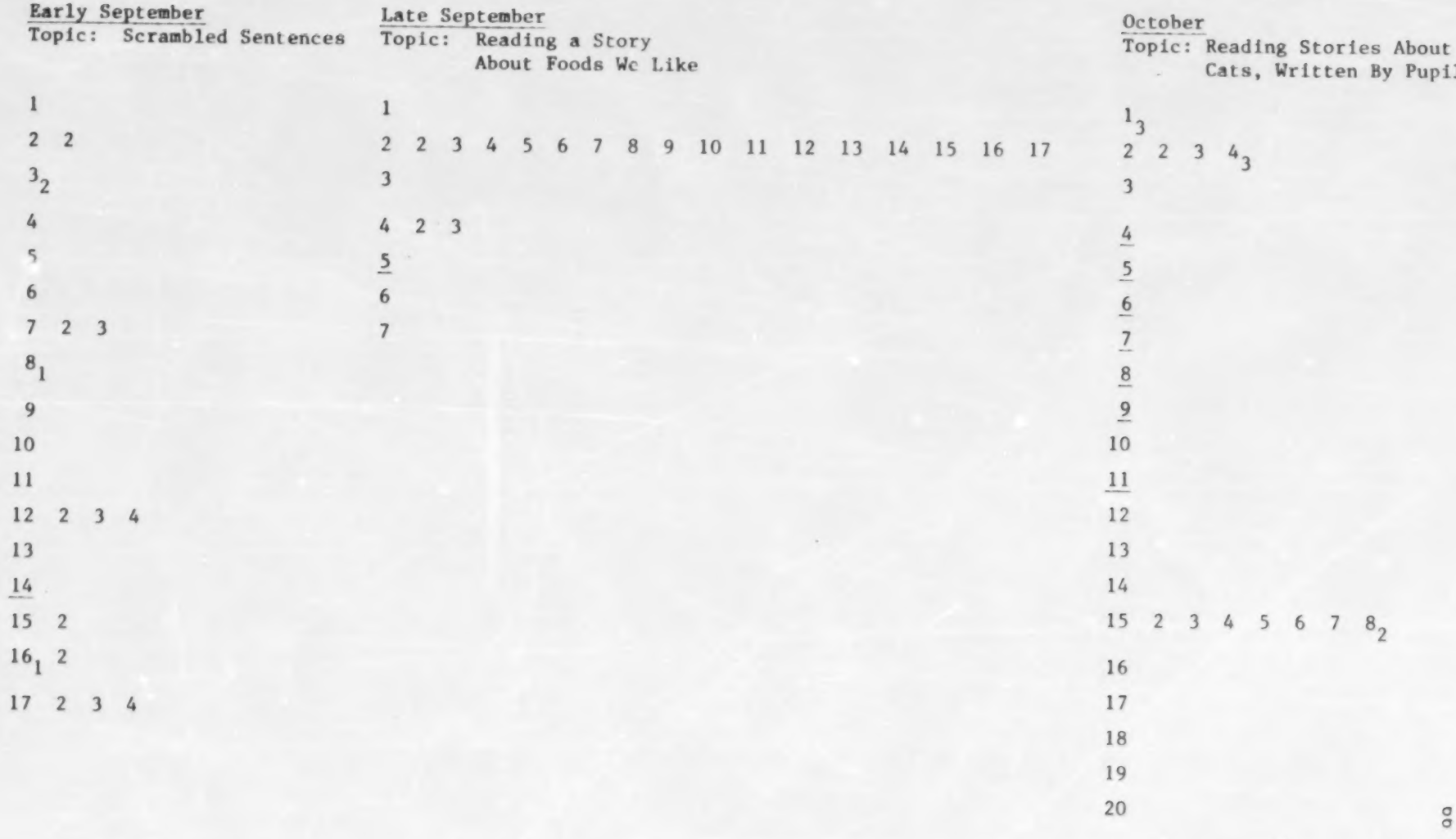
An underlining of a question cycle indicates that it was initiated by a pupil, rather than by the teacher (i.e., a pupil asked the question that began the cycle). Where a series of embedded cycles occurred, and some of these were initiated by the teacher while others were initiated by pupils, the number of lines indicates how many were initiated by pupils (e.g., a question cycle which included six embedded cycles within it, three of which were questions initiated by pupils, would be diagrammed thus: $1_{\underline{\underline{6}}}$).

The topic of each lesson is noted above the diagram. In several instances these teachers used specific instructional strategies, or "models" (Joyce & Weil, 1972), which they had learned in connection with a Teacher Corps project. Where a specific model or strategy was used, this is noted. Where textbooks were the primary source of materials and questions for discussion, this is noted. If a lesson utilized a special activity other than discussion, this is noted.

What stands out immediately on these graphic displays of lesson structures

FIGURE 5

Structural Sequencing of Question Cycles
In Lessons Taught By
Teacher A



(Continued)

November Topic: Practicing the Thanksgiving Play	December Topic: "Sharing Time"	January Topic: The Story of Abraham Lincoln
1	1 1 2 3 2 4 8 5 2	1
2	2	2 2 3 4 5 6 7 8 9 10 3 11 12 13 14 15 5 16
3	3 3 2 2	3
4	4	4
5	5 4 2 2 3 1	5
6		6
7		7
8		8
9		9
10		10
11 2 3 4		11
12 2 3		12
13		13 3
14		14
15		
16		
17		
18		
19		
20		
21		
22 2 3 4 2		
23		
24		
25		
26 2		

Structural Sequencing of Question Cycles
In Lessons Taught By
Teacher B

Early September
Topic: Capitalizing Names
(Concept Attainment Model)

1
2 2
3
4
5
6
7 2 3
8
9
10
11
12_1 2 3 4 5_1
13
14
15
16 2 3
17
18
19

Late September
Topic: Feelings
(Synetics Model, Personal Analogy)

1
2 2 3
3 2
4 2 3 4 5 6 7
5 2 3 4
6 2 3
7 2_1 3 4
8 2 3
9 2_1 3 4
10 2_1 3 4 5 6
11 2 3 4

October
Topic: Categorizing Concrete Object
(Concept Formation Model)

1
2
3 2
4
5 2
6
7
8 2_3 3_1
9
10
11
12_1 2
13_1
14
15 2 3
16
17
18
19
20
21
22_1
23
24

FIGURE 6

(Continued)

November

Topic: Describing Thanksgiving Food
(Synectics Model, Direct Analogy)

1 2 3

2

3 2 3

4 2_1 3_1

5 2 3

6

7

8

9 2_1

10

11

12

13

14 2 3_1 4 5 6

15 2 3 4 5_1 6 7

16

17

18 2 3 4

19

December

Topic: Asking Good Questions
(Inquiry Training Model)

1

2

3

4

5

6

7

8

9

10

11

12

13

14 2

15

16

17

18

19

20

21

22

23

24_1

25

26_1

27_1

28_1

29

30

31

32_3

33

34_1

35_5

36

37

38

39

40

41 2_1

42_4

43

January

Topic: Origins of Names

1_4

2_1

3 2_3

4 2 3_2 4_6

5 2_3 3 4 5_1

6_1 2 3_1 4_1 5_1

7

8_1 2 3 4

Structural Sequencing of Question Cycles
In Lessons Taught By
Teacher C

Early September
Topic: How Animals Communicate
(Textbook Lesson)

1
2
3
4
5
6_1
7 2 3 4
8
9
10
11
12
13 2 3 4
14
15_1 2 3_1 4 5 6 7
16
17 2 3_2
18
19
20 2
21
22
23
24
25_2
26
27
28
29
30
31_2
32
33_2
34
35

Late September
Topic: Interpreting Signs
(Textbook Lesson)

1
2
3
4 2 3 4 5
5 2
6_3
7_1
8 2 3 4_1
9
10
11
12
13
14_1 2
15_2
16
17_1
18_2
19
20 2
21_1

October
Topic: Making Comparisons
(Synectics Model, Direct Analogy)

1_1 2 3 4
2 2 3 4 5 6 7
3 2 3 4 5 6 7_1 8
4 2 3
5_1 2 3 4 5
6 2 3_1 4 5
7 2 3
8 2 3
9
10
11
12
13 2 3 4
14

FIGURE 7

(Continued)

November
Topic: Asking Good Questions
(Inquiry Training Model)

1		26
2		27
3		28
4		29
5		30
6		31
7		32
8		33
9		
10		
11		
12		
13		
14		
15		
16		
17	2	
18		
19		
20		
21		
22		
23		
24		
25		

December
Topic: "Interference" in Communication
(Textbook Lesson)

1
2 2_1 3 4 5 6
3
4
5
6
7_3
8 2 3 4 5
9
10 2
11 2 3
12
13_2
14_1
15_4
16_6

January
Topic: Nouns
(Textbook Lesson)

1
2
3 2
4 2 3
5 2_1 3_1
6
7 2
8
9
10_1
11 2_1
12_1
13 2 3
14
15_1
16_1
17_1
18_2
19 2 3 4 5_1

FIGURE 8

Structural Sequencing of Question Cycles
In Lessons Taught By
Teacher D

Early September Topic: Compound Words (Concept Attainment Model)	Late September Topic: Action Words (Activity is Pantomime)	October Topic: Description Words (Activity is Drawing A Witch)
1	1 2 3	1
2	2 2 3	2
3	3	3
4	4	4 2_1
5	5	5_1 2_2
6	6_3	6
7_1	7_2	7 2_4 3_2
8_1	8	8
9	9_1 2_1 3_1 4_2	9_3 2
10	10_1 2_4	10
11	11	11
12	12	12
13_1	13 2	13
14 2 3 4	14	14_1
15	15	15
16 2_3	16 2 3 4	
17 2 3	17	
18 2_2 3 4_1 5	18	
19	19_1 2	
20_1	20	
	21	
	22_1	
	23	
	24	

FIGURE 8

(Continued)

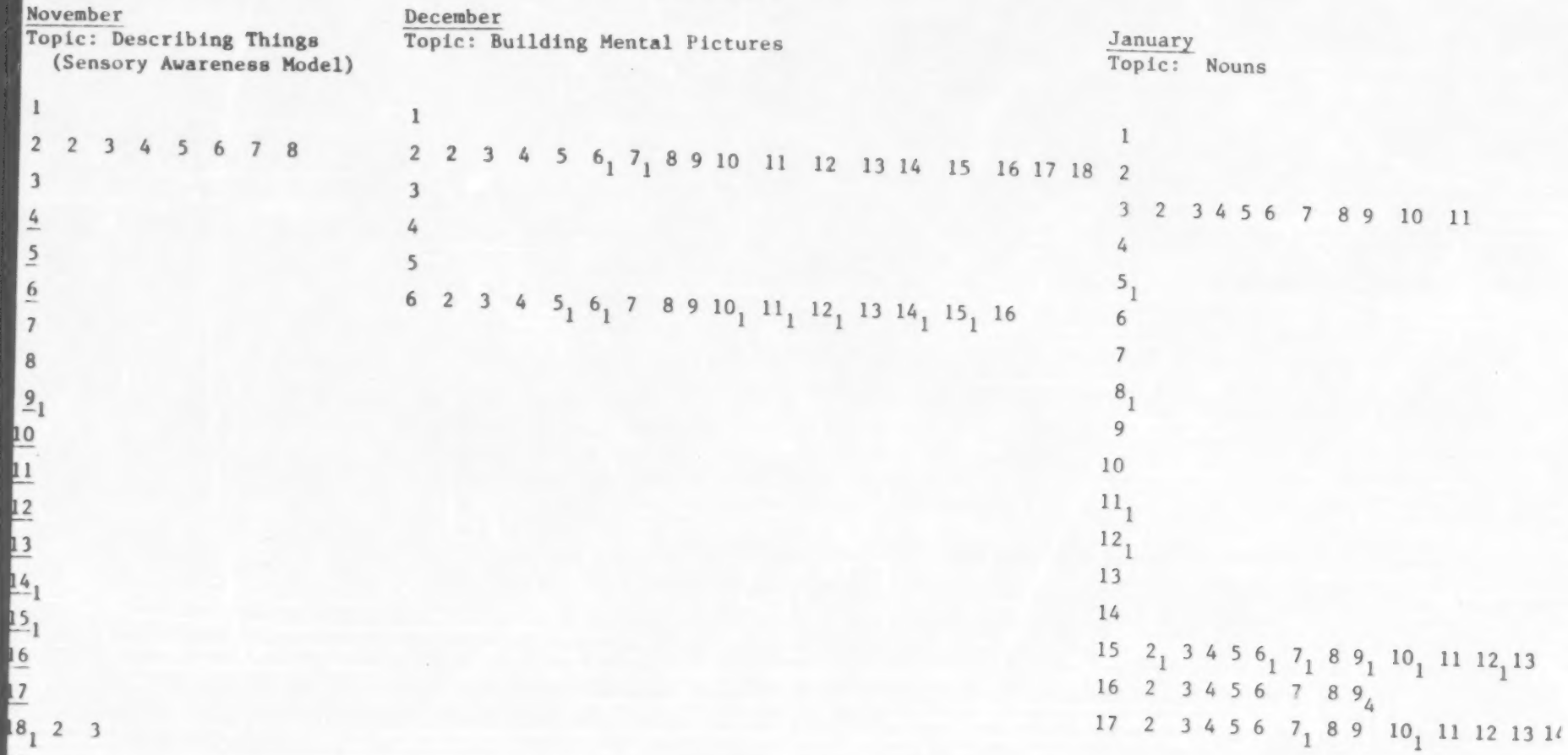


FIGURE 9

Structural Sequencing of Question Cycles
In Lessons Taught By
Teacher E

Early September Topic: Word Order and Sentence Meaning (Textbook Lesson)	Late September Topic: Choral Reading (Textbook Lesson)	October Topic: Preparation for Creative Writing on "The Haunted House"
1	1	1 2_1 3 4 5 6 7
2 2	2_1	2
3	3	3 2
4	4	4
5	5 2 3	5
6 2	6_1	6
7	7_1	7 2 3 4 5 6
8_2	8_1	8 2 3
9	9 2 3 4_1	9
10_3	10	10
11	11	11
12_1	12	12
13_1	13 2	
14_1	14_1	
15	15 2	
16_2	16	
17	17	
18	18	
19	19 2 3 4 5_1 6	
20 2	20	
21_1 2	21	
22		
23		
24		

FIGURE 9

(Continued)

November Topic: Reading Comic Strips Written By Pupil Groups	December Topic: Poetry Interpretation (Textbook Lesson)	January Topic: Poetry Interpretation (Textbook Lesson)
1	1 2_3	1
2 2	2	2
3	3	3
4_1	4	4 2 3 4 5
5	5 2 3 4 5	5
6	6 2 3 4 5 6 7 8 9 10_1	6
7	7	7
8	8 2_3	8
9	9_1 2 3_1 4 5 6 7	9
10	10	10
11_2	11 2 3_1 4 5 6 7 8 9 10_2 11 12 13	11
12	12 2_1 3 4_1 5_1 6 7	12
13		13_4
14		14
15 2		15_2
16		16
		17
		18_1 2
		19_4
		20_2

FIGURE 10

Structural Sequencing of Question Cycles
In Lessons Taught By
Teacher F

Early September Topic: Word Order and Sentence Meaning (Textbook Lesson)	Late September Topic: Communicating By Pantomime (Textbook Lesson)	October Topic: Reporting Embarrassing Experience
1	1	1_1
2 2	2	2
3	3 2 3	3
4	4 2_1 3_2 4_1	4_2 2_1 3_1 4_1
5_1 2_2	5	5
6	6	6_1 2 3
7	7 2_1	7
8	8 2 3 4 5_1 6	8 2
9	9	
10	10_2	
11_3	11	
12	12 2_1	
13	13	
14_4	14	
15	15_1	
16 2	16	
17	17_2	
18	18	
19_1		
20		
21		
22		
23_1		
24		

(Continued)

November

Topic: Transforming Statements to Commands (Textbook Lesson)

1 2_1 3_1 4
2_1
3 2 3 4
4
5 2
6
7
8
9
10 2 3 4
11
12
13 2 3 4
14
15
16
17
18
19
20
21
22
23
24 2 3 4
25 2 3

December

Topic: Describing Feelings (Personal Analogy)

1
2
3
4_4
5
6_1 2 3
7
8
9_1 2 3_1
10_2
11 2 3 4
12
13 2 3
14
15 2 3 4
16 2
17 2 3 4_2 5 6 7_1

January

Topic: Compound Words (Textbook Lesson)

1
2
3
4
5
6_1 2 3_2 4
7
8
9
10_3
11
12_1
13
14
15
16
17
18 2 3 4 5 6 7 8 9
19_1 2_1 3 4_1 5
20
21_1 2_1 3_1 4_1 5 6 7 8 9_1

is that each teacher shows some variation in structure from one lesson to the next, and that some teachers show marked variation between lessons (e.g., compare the November, December, and January lessons of Teacher A, in Figure 6, or the December and January lessons of Teacher B, in Figure 7). There are other interesting aspects of these diagrams that may not be so immediately obvious.

Consider the lessons taught in early September by Teachers E (Figure 10) and F (Figure 11). These happened to be two lessons dealing with exactly the same page of the same textbook, though taught by two different teachers to two different classes on two different days. Note the similarity in the structure of these two lessons. Now compare these to other "textbook lessons." (See Figures 8, 10, and 11; in each figure, four lessons are designated as textbook lessons.) In all but one case, these lessons tend to be more vertical than horizontal in structure, with several instances of conjunctive sequences which are short to moderate in length. The single exception to this general pattern is Teacher E's December lesson (Figure 10), where many students were invited to interpret a poem presented in the textbook by giving their own opinions and ideas about the problem raised in the poem.

If textbook lessons appear to have a somewhat distinctive structural sequencing of question cycles, this is even more true of "model" lessons. Consider, for example, the two "inquiry training" lessons (Teacher B in December, Figure 7; Teacher C in November, Figure 8). These lessons stand out because they are almost entirely vertical in structure, and because a large number of question cycles are initiated by pupils. This lesson strategy involves having students ask questions that gradually zero in to identify critical variables that may serve to explain a "puzzling situation" introduced by the teacher. Thus, the lesson structure displayed in these two instances appears to be appropriate to the model. In contrast to these two lessons are three which follow a "synectics" model (Teacher B in late September and in November, Figure 7;

Teacher C in October, Figure 8). These lessons show much more horizontal, or conjunctive, development in relation to vertical development. The "Synectics Model" involves pupils in analogical reasoning, asking them to make comparisons between two rather dissimilar things as a way of developing creative thinking. Since divergent responses are desirable, it is appropriate to have several students respond to any given question. This pattern of question cycling is clearly evident in the diagrams for these three lessons.

The impression derived from studying these graphic displays of the lessons, then, is that the structural sequencing of question cycles can vary a great deal from lesson to lesson, and that much of this variation may derive from the instructional strategy, or teaching procedure, being used. As a descriptive device, the structural diagram appears to reflect some important similarities and differences between lessons.

Measures of conjunctive and embedded development. The data contained in the lesson diagrams can be used to quantify certain aspects of the lesson structure. We have developed two different measures for this purpose. The measure of conjunctive development of the lesson is calculated as follows:

$$\left(\frac{\text{Number of Questions Which Initiate a Conjunctive Series}}{\text{Number of Questions Contained in the Vertical Sequence}}\right) \text{Average Number of Questions in a Conjunctive Sequence}$$

This measure is designed to give some quantification of the degree to which questions are developed "horizontally," by giving several pupils an opportunity to respond to the same question.

The measure of embedded development of the lesson is calculated in a similar way, as follows:

$$\left(\frac{\text{Number of Question Cycles Which Include an Embedded Cycle Within Them}}{\text{Total Number of Question Cycles in Lesson, (Including Conjunctive Cycles)}}\right) \text{Average Number of Embedded Cycles Within a "Main" Question}$$

This measure is designed to quantify the degree to which pupil responses are developed, expanded, or refined through use of probing questions.

These measures are presented for each lesson, organized by teacher and time, in Table 14. Friedman's analysis of variance by ranks shows no significant differences among teachers on either of these measures, but there are significant differences over time for conjunctive development ($p < .05$) and differences that approach significance for embedded development ($p < .10$). In each case the December and January lessons tend to be ranked highest, suggesting that questions may tend to be pursued in somewhat more depth in the middle of the school year than they are at the beginning. However, the November lessons tend to be ranked lowest, and we can offer no logical explanation for this pattern.

It is also worth noting that measures of conjunctive development are quite similar for lessons based on similar instructional strategies. For example, the two textbook lessons on word order and sentence meaning show conjunctive development measures of .334 (Teacher E in early September) and .250 (Teacher F in early September). The two inquiry training lessons show measures of .094 (Teacher B in December) and .060 (Teacher C in November). Conjunctive development in the three synectics lessons was calculated at 3.636, 1.633 (Teacher B in late September and November), and 3.003 (Teacher C in October). These measures, therefore, confirm the impression derived from the pictorial display, that the question cycle structure of lessons may be related to the instructional strategy being used.

Saliency of pupil responses. When the saliency of pupil responses to other pupils is examined in relation to types of question cycles, significant differences are found. Table 15 presents the proportions of pupil responses which were reported as heard by more than 25% of the pupils reporting, organized by type of question cycle. When pupil reports of structurally independent, con-

TABLE 14

A Comparison of Lessons
in Terms of Structural Characteristics
(Organized by Teacher and Time)

Measures of Conjunctive Development

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.999	.686	.572	.700	1.334	.250
Late September	2.860	3.636	.814	.835	.809	.945
October	.600	.499	3.003	.601	1.499	1.125
November	.423	1.633	.060	.578	.250	1.000
December	1.998	.094	1.000	5.661	3.830	1.523
January	1.136	2.500	1.052	2.761	.350	1.283

Ranks for Times by Teacher: $x_r^2 = 11.849$, df = 5; $p < .05$

Measures of Embedded Development

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Early September	.146	.070	.220	.329	.393	.440
Late September	.000	.070	.375	.459	.210	.399
October	.267	.224	.090	.700	.040	.503
November	.118	.120	.000	.140	.165	.070
December	2.078	.462	.594	.240	.301	.342
January	.367	1.082	.341	.278	.520	.338

Ranks for Times by Teacher: $x_r^2 = 9.398$; df=5; $p < .10$

junctive, and embedded question cycles are compared, Friedman's analysis of variance by ranks shows a highly significant difference (p=.0017), with pupil responses that occur in conjunctive question cycles being most salient (reported as heard most frequently), and pupil responses that occur in embedded cycles being least salient.

The embedded cycle referred to here is the question cycle which occurs in reaction to a pupil's response to another (main) question, that is, the cycle which is contained within another cycle. To examine saliency of pupil responses further, we have also compared reporting of pupil responses in question cycles which contain no embedded cycles, question cycles which do contain embedded cycles, and the embedded cycles themselves. These data are presented in the second half of Table 15. Friedman's analysis of variance by ranks again shows a highly significant difference in the proportion of pupil responses that are salient to other pupils. Pupil responses that occur in question cycles that contain embedded cycles (i.e., pupil responses which are probed by the teacher or other pupils) are most salient to other pupils, and pupil responses that occur within the embedded cycles themselves (i.e., pupil responses to the probing questions) are least salient.

Taken together, these findings suggest that pupil comments are most salient to other pupils when they occur in response to a question that is pursued (expanded, developed) by the teacher in some way, e.g., by asking a probing question of the same student, or by asking another student to respond to the same question. This interpretation fits well with findings presented in Part II of this final report, relating to pupil interpretations of the functions of questions, responses, and praise in lessons. These earlier findings suggest that pupils interpret the function of the question cycle as follows:

1) Teacher questions serve to identify the things that one ought to know;

TABLE 15

Saliency of Pupil Comments
Compared By Type of Question Cycle
(proportions of pupil comments reported
with high frequency)

	Pupil Responses in Independent Cycles	Pupil Responses in Conjunctive Cycles	Pupil Responses in Embedded Cycles
Classroom A	.177	.291	.154
Classroom B	.333	.442	.228
Classroom C	.229	.322	.055
Classroom D	.231	.259	.042
Classroom E	.235	.300	.120
Classroom F	.167	.464	.213

x_r^2=10.350; df=2; p=.0017

	Pupil Responses in Cycles Without Embedded Cycles	Pupil Responses in Cycles Containing Embedded Cycles	Pupil Responses in Embedded Cycles
Classroom A	.248	.250	.154
Classroom B	.379	.444	.228
Classroom C	.255	.333	.055
Classroom D	.216	.333	.042
Classroom E	.262	.323	.120
Classroom F	.331	.349	.213

x_r^2=12.017; df=2; p=.00013

2) The answers to questions serve to inform other pupils, so that if one pupil knows what ought to be known, soon all may know it; and

3) Praise serves to mark the pupil responses which are particularly "good" (most accurate, most informative), so that pupils should give special attention to those answers which are praised.

Given the findings on saliency of pupil responses to other pupils just reported here, we can now add an additional point to this summary:

4) Teacher extension of a question cycle (by making it a conjunctive cycle, or by embedding a new cycle within it) serves to indicate to pupils that this is a particularly important question, so that pupils should give special attention to the response(s) which it elicits.

Summary. This system of analysis appears to be potentially productive for use in other studies. It provides a graphic display of the sequential structure of question cycling in lessons, as well as permitting quantification of the degree of "conjunctive development" and "embedded development" contained in the lesson. In its application in this study, the system did not provide evidence of systematic differences among teachers, but it did show significant differences over time. The structural diagrams appear to reflect similarities and differences in lessons that relate to teachers' use of particular instructional strategies. In this particular study, the numbers of lessons following a given strategy or model were too small to permit a test of significance, but this is a good question for future investigation.

The saliency of pupil comments to other pupils was explained, at least in part, by use of this analysis system. Pupil comments that occur in response to a question that is extended by the teacher (by use of conjunctive or embedded cycles) are most salient to other pupils. This finding is readily integrated into earlier findings about pupil interpretations of the functions of questions in lessons.

Classroom Language Factors and Success in School: Three Descriptions

As we noted in our introduction, one important reason for considering three different analysis systems is to determine whether using different approaches to analysis of classroom language factors will result in identifying sharply different relationships between classroom language factors and success in school. We have a limited opportunity to examine this question by comparing the three approaches with regard to their descriptions of Classroom E and Classroom F. A regression analysis (reported in detail in Part I of this final report) showed that there were significant classroom differences in final reading achievement, when entering reading achievement was controlled for. In particular, there was a significant difference between the two fourth grades, Classroom E and Classroom F, with Teacher F's pupils scoring higher.

We turn now to consider what each of the three descriptive systems tells us about differences in the language patterns in these two classrooms, for these differences will suggest classroom language factors which may contribute to differential pupil success in school.

Shuy has contrasted these two teachers in a variety of ways, based on the dimensions of language that he described. These contrasts are summarized in Figure 12. The classroom language factors that stand out here as possible contributors to teaching effectiveness are: focus on content rather than form of the lesson; natural use of language rather than talking "teacherese;" fluid movement of discussion topics rather than tight control by teacher; adding personal information rather than withholding information. These factors are all elements of what Shuy calls a strategy to reduce the mismatch of school and home talk styles. This strategy would: eliminate the unneccessary characteristics of school talk; build on the natural conversational style with which children are familiar; and permit students to talk, capitalizing

FIGURE 12

Contrasting Two Teachers
Along Language Dimensions

Teacher E	Teacher F
1. placement in the "form of doing content" circle	1. placement in the "do content" circle
2. one of the "best examples of the special language of classroom teacherese"	2. the most "natural" use of language of all six teachers
3. "iron-fisted control of the topic;" she is "always in control, inching forward slowly, never fully revealing the right answers"	3. "adept at topic branching;" a main feature is "the fluidity of her lessons;" she is "attentive to the need for topics to flow smoothly from one another"
4. she illustrates a technique of "management by withholding information"	4. she "is personal (adding her own experience to the conversation)"

tive development is 1.337, and the standard deviation is 1.225. Teacher E has a mean of 1.179 and a standard deviation of 1.381 for her six lessons. Teacher F has a mean of 1.021 and a standard deviation of .432. According to this system of analysis, then, a classroom language factor which may contribute to pupil success in school is the establishment of a fairly stable pattern of a moderate amount of conjunctive development of lessons, as opposed to a tendency to show extreme variation from lesson to lesson. It should be noted here that pupil responses in conjunctive cycles are significantly more salient to other pupils than responses in other types of cycles, thus when a stable pattern of moderate conjunctive development occurs, pupils may have more opportunity to "learn" from other pupils.

Each of these three approaches, therefore, identifies a different factor or set of factors that may contribute to pupil success in school. Interestingly enough, however, some of the different factors lend support to each other. For example, Shuy's description of language dimensions highlights the probable importance of a "natural" use of language as opposed to "teacherese," while Ramirez' speech act analysis notes the probable value of avoiding language extremes (i.e., not using certain types of speech acts in disproportionate amounts). In addition, the language dimension approach suggests the probable importance of focusing on content rather than form of the lesson, while the speech act analysis notes the probable value of avoiding a disproportionate use of both management statements and meta statements in relation to informatives.

It would appear then, that the findings based on quantification and statistical significance derived from the speech act analysis serve to specify and "harden" the distinguishing classroom language factors identified by Shuy's language dimension approach. Alternatively, the findings from the language dimension analysis serve to "flesh out" the distinguishing classroom factors.

identified by Ramirez' speech act analysis, and place them in a broader context. Considered together, the findings from these two approaches, with regard to probable relationships between classroom language factors and pupil success in school, provide important clues for variables to be considered in further research on teaching. Considered separately, the findings from each of the two approaches are somehow incomplete, and not entirely convincing.

In addition, we must note that each of these two approaches, as presented here, only provides information about probable direct relationships between classroom language factors and pupil success in school. The intervening variable of pupil perceptions of classroom discourse is not an important component of the factors which distinguish Classroom E from Classroom F, as identified by either of these two approaches. It is a component, however, of the distinguishing classroom language factor identified by the question cycle sequence approach. The stable patterns of conjunctive development of lessons, which distinguish Teacher F from Teacher E (and all other teachers in this study) are tied to pupil patterns of attending differentially to pupil responses that occur in conjunctive cycles. Thus, this method of analysis points to a potentially important link between classroom language factors, pupil perceptions of classroom discourse, and pupil success in school. The reader will recall, however, that initial analyses using this approach yielded no statistically significant classroom differences.

We must conclude that although each of these three approaches to analysis of classroom language factors provides different findings about classroom language factors that may be related to pupil success in school, the findings do not contradict each other. Each system contributes something of value to our understanding of sociolinguistic variables that may be important to pupil success in school, but each also leaves something to be desired. Is it possible that no single system is adequate to this task?

Constrasts Among the
Three Descriptive Systems

There are more similarities and differences among these three approaches to sociolinguistic analysis of lessons than can be revealed by a comparison of classrooms E and F. We turn now to examine these more fully.

Certain global differences stand out sharply. To begin with, the presentation of data in each system highlights the most basic difference among them: the fact that one is a conceptual approach, one is a categorical approach, and one is a structural approach. The analysis of language dimensions, a conceptual approach, presents a verbal description of the lessons. The speech act analysis, a categorical approach, presents a numerical description of the lessons. The analysis of question cycle sequences, a structural approach, presents a graphic description of the lessons.

Each system reveals at least one aspect of classroom language that is ignored by the other two. The language dimension approach provides information on supersegmentals and topic cycling. The speech act analysis approach provides information on the frequencies with which discrete types of speech acts occur, and distinguishes between use of real vs. psuedo questions, and participant vs. non-participant informatives. The analysis of question cycles provides information on patterns of sequencing question cycles, and demonstrates that these patterns are related both to the instructional strategy selected, and to pupil patterns of attention.

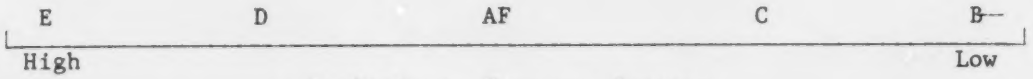
It is also the case that certain topics are addressed by all three analysis systems, and when this occurs each system tends to reveal rather different kinds of information. One such topic is "form vs. content." The language dimension approach arrays the six classrooms on a continuum, reporting the observers' general impression that some teachers focus attention almost entirely on the appropriate "form" for using language in the classroom, ignoring con-

tent almost entirely, while other teachers focus attention on the form of the lesson in which the content is presumably embedded, and still others focus attention more on the content itself than on the form. The speech act analysis compares the teachers on specific language ratios, describing the frequency of management statements to informatives, and metastatements to informatives, thus providing objective measures of both attention to form of using language vs. attention to lesson content, and attention to form of the lesson vs. attention to lesson content. The analysis of question cycles illustrates the fact that lesson "form" is independent of lesson content. (There are two lessons on nouns, two on compound words, and three on word order and sentence meaning, or "scrambled sentences," and in each such set of lessons some differences in lesson form are obvious.)

These types of distinctions among the three systems are all interesting, but they tend to be differences which are complementary rather than contradictory. If these were the only types of distinctions to be made, then we might conclude that choosing to use one of these analysis systems rather than another would probably yield findings that differed more in form than in substance. But there are some clear contradictions in the findings of one system vs. another.

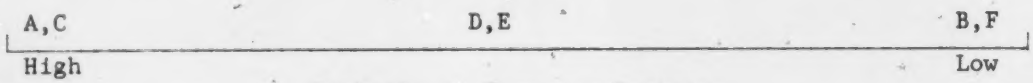
For example, to return to the topic of form vs. content, the language dimension approach tells us that: Teachers A and C are similar in that they focus on the "form of doing school," and never get to content; Teachers D and E are similar in that they focus on the "form of doing content" (i.e., emphasize lesson form over lesson content); and Teachers B and F are similar in that they actually "do content" (i.e., provide noticeable amounts of information in their lessons). The data from the speech act analysis support part of this contention, in that Teachers D and E are both ranked higher than other teachers

on the ratio of meta statements to informatives (lesson form in relation to lesson content), and Teacher B is ranked lower than other teachers on the same measure. In addition, Teacher B is ranked low on the ratio of management to informatives, suggesting that she does deal with relatively more content than the other teachers. But here the similarities stop, and the contradictions begin. We note that teacher E is the highest ranked teacher on the ratio of management to informatives, while Teachers A and C, who supposedly rarely deal with content, rank in the middle on this measure, along with Teacher F, who is designated as "doing content." Furthermore, Teacher C is similar to Teacher B in ranking low on the ratio of meta statements to informatives. Thus, if we arrayed the six teachers on a continuum based on these frequency ratios, it might look something like this:



Emphasis on Form vs. Content
(Speech Act Analysis)

in contrast to the continuum presented by the language dimensions approach, which would look like this:



Emphasis on Form vs. Content
(Language Dimensions Approach)

Clearly, with regard to this feature of language, it will make a difference in our findings if we select one system rather than another, particularly with regard to distinctions between Teachers A and F.

How do we resolve this conflict? One way is to generate some additional speech act ratios. We can, for example, compare the frequencies of informatives to non-informatives in the two classrooms, to see whether these ratios provide any evidence about differences in the amount of "content" dealt with. The ratio of teacher informatives to non-informatives in the opening act is .64 for Teacher A and .65 for Teacher F. These are clearly not very different.

But the ratio of pupil informatives to non-informatives in the answering act is 2.72 for Classroom A and 6.76 for Classroom F. Classroom A's ratio is the lowest of all six classrooms, and Classroom F's is the highest.

Thus we learn that the pupil language is distinctly different in the two classrooms with regard to attention to content. This item of information was not apparent in the initial reports of either of the two systems. Had it not been for the apparent discrepencies in the findings of the two systems, it might never have been revealed.

Contradictory evidence, then, should not lead us to choose one system and discard another, necessarily. It may more profitably lead us to probe more deeply into the data, and promote further insights. The fact that contradictory evidence exists, however, makes it clear that choosing one analysis system over another may lead to critical differences in our final conclusions.

Contradictions are not necessarily the most critical type of contrast among the various systems, however. There are important differences in what is revealed and what is concealed by alternative systems of analysis. Perhaps the most striking example of this is the fact that the speech act analysis reveals significant classroom differences in language use, but only hints vaguely at language differences related to instructional strategy, or lesson "model." The analysis of question cycle sequences, on the other hand, reveals the language patterns that emerge when particular instructional models are used, but masks classroom differences. What do we lose in descriptive power by selecting one of these systems and discarding the other?

The Possibilities of Description By Triangulation

It is abundantly clear from this excursion into a comparative analysis of three different systems for sociolinguistic analysis of classroom language (a non-statistical approach to meta-analysis), that selecting one system vs. another

can affect both the form and substance of our findings. What may be even more important is the fact that when analysis systems are compared in this manner, both complementary and contradictory findings can be productive of further insights. Perhaps the most important point of all has to do with the distinctive features of the systems, which allow one system to reveal what another conceals, for when the various systems are laid side by side, a much fuller picture emerges of the phenomenon under study.

Certainly none of these results is totally unexpected. Anyone who has ever worked with more than one system of describing or analyzing classroom interaction would have predicted such an outcome from the start. What is rather surprising to us is how well the findings from three such diverse systems interrelate. As we try to construct a picture of these classrooms, the systems provide us with interlocking pieces of the puzzle, where we might have expected that each would help us to build a discrete segment of the total picture.

We are intrigued by this outcome. We began this study in the belief that a triangulation of the perceptions of pupil participants, teacher participants, and an outside observer would enrich our understanding of relationships between classroom discourse and success in school, and the explorations reported in Parts I, II, and III of this final report have confirmed that belief. We now conclude that a triangulation of the perceptions provided by three different "outside observers" (or observation systems) can be equally powerful in developing our understanding of classroom language.

The complexities of classroom interaction have long been acknowledged by researchers. To date, the most successful attempts to deal with these complexities have involved extending the number and types of behaviors observed, adding information on the contexts in which behavior occurs, and using statistical techniques which allow for consideration of multiple variables and multiple

"levels of analysis." The method of description by triangulation, which has been explored here, could add an important new weapon to our arsenal, enabling us to be even more effective in our struggle to understand the world of the classroom. Certainly it is deserving of further development and testing.

CONCLUSION

The question which instigated this particular piece of our investigation was: how might the approach that we select for the analysis of language as a linguistic system affect what we learn about language in a given social situation. A more specific concern was: would the findings of this study with regard to relationships among classroom language factors, pupil perceptions of classroom language, and pupil success in school be different if we had selected a different approach to the analysis of classroom language factors.

On the basis of the analyses presented here, we conclude that the relationships among variables that were originally identified through use of the language dimensions approach to analysis of classroom language factors have not been called into serious question by the descriptions of classroom language factors derived from the two alternative analysis systems. In several instances, information from the speech act analysis corroborates the descriptions presented by the language dimensions approach. Where contradictions have appeared, further probing of the data has tended to reveal additional information which, in the final analysis, supports the findings of the language dimensions approach.

It is comforting to know that the initial findings hold up after this rather intense scrutiny. But this is not to say that the findings are <u>unchanged</u> as a result of this comparison of alternative systems. From the point of view of many of our colleagues, we are sure, the descriptions of classroom differences provided by the language dimensions approach are considerably more persuasive because they have been corroborated by findings of statistically significant classroom differences based on the speech act analysis. Beyond that, the re-

lationships between teacher expansion or development of questions through use of conjunctive or embedded cycles, pupil patterns of attending to responses of other pupils, and pupil success in school, revealed by the analysis of question cycle sequences, add an important new insight to our total understanding.

Thus, while the initial findings have not been seriously challenged by the findings from the alternative descriptive systems, they have been considerably expanded and strengthened. Much the same sort of statement could be made had the initial findings been based on a speech act analysis, rather than a language dimensions approach. However, had we begun the study with an analysis of question cycle sequences, we would have concluded that there were almost no classroom differences in patterns of language use. In this instance, the initial findings would have been considerably altered by testing them against descriptions from alternative systems. The analysis of question cycle sequences, therefore, would seem to be a poor beginning point in attempting to identify classroom language factors relevant to success in school, but had it been excluded entirely from the comparative analyses, the final results would be considerably less revealing with regard to the chaining of relationships among variables.

It is clear that what we know is highly dependent upon our ways of knowing. The analyses presented here merely provide concrete evidence of the specific effects of different ways of knowing with regard to an understanding of classroom language patterns in six elementary classrooms. One response to these results could be to shrug our shoulders, acknowledge that any way of knowing must be incomplete, and resign ourselves to accepting that fact. Our preferred response is to continue searching for methods that will make our understanding of the classroom more nearly complete. It is our strong belief that the method of triangulation of findings from alternative systems of analysis can greatly contribute to that more complete understanding. We earnestly recommend its use in future research on teaching.

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APPENDIX

Speech Act Analysis Category System
Developed by Arnulfo Ramirez

Opening Move

1. Real Question - RQ - asking for information, clarification, reason., not known by the speaker. Usually expressed in question form.
   E: Who said that?
   Are you afraid?
   How many of you agree with her?

2. Psuedo Question - PQ - when the teacher is asking for information, clarification, reason, etc., to knowledge previously known. It is usually expressed in question form.
   E: Where does the capital letter go in the sentence?
   Is he right?

3. Direct Request (Management)- DM - Commanding the student to answer or to act. They are expressed in the imperative form. (Lesson related * DM^S)
   E: Open your book.
   Tell me, what is a sentence?

4. Direct Request (Discipline) - DD - commanding the student to act, using the imperative form.
   E: Be quiet!
   Stop talking!

5. Indirect Request (Management) - IM - commanding the student to answer or act, expressed through the use of a modal.
   E: Will you tell me X?
   Can you ...
   Why don't you ...

6. Indirect Request (Discipline) - ID - commanding the student to act, usually expressed in question form.
   E: Why don't you stop talking?
   Are you going to stop talking?

7. Informative (Participant) - IP - providing an opinion, idea, example, situation, etc., which includes the speaker (T or S). It is usually expressed in sentence form. NOT IN QUESTION FORM.
   E: 1. I think she's at the wrong room.
   2. It sounds like a sentence to me.
   3. Sometimes we get some strange ones at the door.
   4. I think, I feel ...

8. Informative (Non-participant) - NPI - stating fact, idea, example, observation, reason, which does not include the speaker directly, usually expressed as a statement.
   E: 1. Some people go to bed to sleep.
   2. There are two more sentences.
   3. Well, there's the pig that had wings.

9. Metastatement - M - informating the student of what is going to occur, or justifies what is going to occur in the lesson. It is expressed in the future tense. *What the teacher is going to do in the lesson.
   E: 1. I am going to give you some words.
      2. Today we are going to study ...

10. Expressive - E - A personalized comment, praise, or negative observation. It's a comment addressed to the student. It is usually not lesson related.
   E: 1. That's a pretty dress.
      2. You're a sleepy bunch today.
      3. This is terrible weather.

Answering Move

1. Reply (Participant) - RP - the student includes himself (e.g. personal opinion, feelings, attitudes) in his response, usually includes pronouns "I", "we", "me".

2. Reply (Non-participant) - RNP - the student responds to the question without providing a personal opinion, attitude, etc.

3. React (Verbal) - RV - a response to a request (e.g. read, answer the question)
   $R.V._1T$: What are you doing?
   S: I am writing.
   $R.V._2T$: Can you erase the blackboard?
   S: Yes, I will.

4. React (Non-verbal) - RNV - a response to a directive (e.g. BE QUIET., Will you open your book, etc.)

5. Acknowledgement - ACK - a response to an informative.
   E: uh, ha
   OK

6. Repeat - REP - repeating what student has said in opening in question form, *not using the exact words at times repeating all or part of it.

7. Reinitiate - REIN - asking the student to repeat or start over.

Follow-Up Move

1. Accept - A - accepting the student's answer.
   E: O.K., good, right.

2. Praise - P - evaluating the students by answer, judging its quality.
   E: Very good, excellent, ...

3. Comment - C - a statement which follows, an accept, praise, correct, or paraphrase.

4. Repeat - REP - repeating exactly what the student says.

5. Correct - COR - correcting student's answer.
   E: No, the answer is ...

6. Paraphrase - PARA - the changing of the student's answer.

Inter-Rater Reliability in Use of Category System

Category	grade 2 Teacher A Lesson (9/18/78) Raters A	B	C	grade 3 Teacher C Lesson (12/6/78) Raters A	B	C	grade 4 Teacher F Lesson (9/15/78) Raters A	B	C	Percentage Agreement A/B	A/C	B/C
Number of Exchanges	17	16	16	19	18	19	12	13	14	98	98	96
OPENING MOVE												
Elicitations												
Real Questions	3	3	2	5	6	6	5	4	5	100	100	100
Pseudo Questions	0	0	1	5	5	6	10	10	9	100	94	94
Informatives												
Participant	6	8	6	8	6	7	8	8	6	100	86	86
Non-participant	11	9	10	10	12	13	9	11	14	94	81	86
Requests												
Direct-Management	12	12	12	12	11	10	20	24	20	94	95	89
Direct-Discipline	0	1	1	0	0	0	0	0	0	--	--	100
Indirect-Management	13	15	14	1	1	0	3	1	3	100	100	100
Indirect-Discipline	1	0	0	0	0	0	0	0	0	--	--	--
Metastatements	3	2	2	0	0	0	2	2	2	80	80	100
Expressives	0	0	1	0	0	0	0	0	0	--	--	--
Read	1	1	1	0	0	0	5	4	5	83	100	83
Unclear	1	1	1	0	0	0	0	0	0	100	100	100
ANSWERING MOVE												
Repl (participant)	0	0	0	0	0	1	0	0	0	--	--	--
Repl (non-participant)	1	1	1	3	3	3	0	0	0	100	100	100
React	13	15	13	12	10	10	14	14	13	100	92	92
Acknowledge	0	0	0	0	0	0	0	0	0	--	--	--
Comment	0	0	0	0	0	0	1	1	1	100	100	100
Repeat	0	0	0	0	0	0	0	0	0	--	--	--
Reinitiate	0	0	0	1	1	1	1	1	1	100	100	100
Inaudible Response	2	1	2	1	2	1	1	0	1	75	100	75
FOLLOW UP MOVE												
Accept	10	9	9	3	4	5	7	7	6	95	100	95
Praise	2	2	3	2	2	1	2	2	2	100	100	100
Comment	2	3	3	3	3	2	5	6	4	83	90	75
Correct	0	0	0	2	2	2	0	0	0	100	100	100
Paraphrase	0	0	0	0	0	0	1	1	1	100	100	100
Repeat	1	1	1	0	1	0	2	1	2	100	100	100
Unclear	0	0	0	0	0	0	0	0	0	--	--	--

Additional Adaptations
in Use of Category System

Two changes were made in use of this category system before final analysis of the data. The first change involved dropping from consideration certain categories of speech acts which occurred very infrequently, or not at all, for all teachers and all lessons. These categories included: direct request (discipline), indirect request (discipline), expressive, acknowledgment, repeat (in answering move), and reinitiate.

The second change involved expanding the category of "React (Verbal)" to reflect various types of pupil responses after being called on by the teacher. These additional categories included:

1. React, Verbal, Participant - a response to a nomination in which the student includes himself/herself in the response;

2. React, Verbal, Non-participant - a response to a nomination in which the student does not provide any personalized information;

3. React, Verbal, Real Question - a response to a nomination in which the student asks a question to which (s)he does not know the answer; and

4. React, Verbal, Read/Recite - a response to a nomination in which the student reads aloud from the textbook, the chalkboard, or his/her own composition.

The categorizing of pupil reactions, using this expanded system, was done by Greta Morine-Dershimer, rather than by the graduate students at the State University of New York at Albany.